

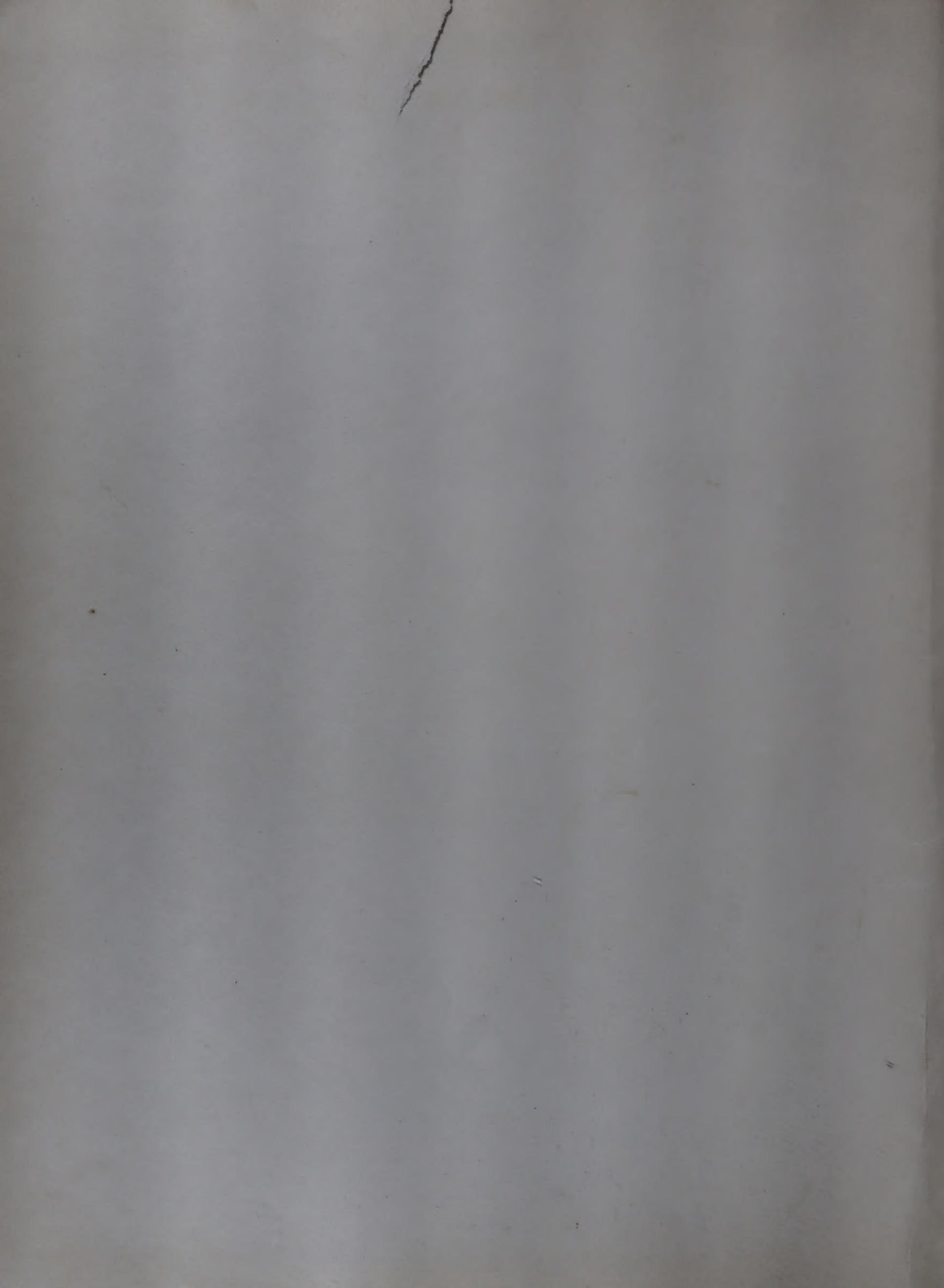


The Marketing Research Corporation of India

**SURVEY
of
INDIA'S EXPORT POTENTIAL
of
SPICES**

August 1968

Vol. I (of three)



UNITED STATES OF AMERICA

AGENCY FOR INTERNATIONAL DEVELOPMENT

American Embassy, West Building, Chanakyapuri,
New Delhi-11, India

September 20, 1968

Mr. N. S. Vaidyanathan
Deputy Secretary
Ministry of Commerce
Government of India
New Delhi

Dear Mr. Vaidyanathan:

Transmitted herewith are the requisite number of copies of the second commodity survey completed under the Export Promotion Division's Program for U.S. fiscal year 1968—Spices.

As you know, seven commodity surveys have been commissioned during the year ending June 30, 1968. These seven surveys cover the following commodities:

1. Fresh and Processed Fruits and Vegetables
2. Spices
3. Textiles and Made-Up Garments
4. Machine Tools
5. Oilcakes and Allied Products
6. Leather and Leather Products
7. Jute and Jute Products

The survey on Fresh and Processed Fruits and Vegetables was recently transmitted to you. We expect all of the remaining surveys to be completed within the next six months and will follow the same procedure as has been followed for the first two surveys, i.e. just prior to publication of the study we will arrange to hold a presentation of the findings by the Indian survey group (and the U.S. consultant assigned to work with them) to the appropriate officials of the various Ministries of the Government of India who are concerned with matters relating to production and marketing of the commodities in question. We will also arrange for a similar presentation of the findings to the relevant industry.

The purpose of these presentations is to permit rapid dissemination of the most relevant findings and recommendations of the study group and also to allow for some cross-examination of the survey group and the U. S. consultant to make certain that the questions uppermost in the minds of the relevant government officials and the industry will be answered in the final report.

Both the survey group and the USAID Mission have gone to great lengths to print and distribute this report with a minimum of time lost so that it will be available for consideration while the data contained therein is still current. As you know, trade statistics get stale very quickly. The

report can now receive the attention it deserves so that such actions as the government and industry believe to be appropriate can be taken with the least practicable delay.

In this connection, I call attention to the recommendation made during the presentation of findings to the Government by the survey group on Fresh and Processed Fruits and Vegetables on May 31, 1968, and endorsed by Mr. K. B. Lall, that a task force be established under the chairmanship of the Planning Commission or the Ministry of Food and Agriculture, with representation from each of the Ministries that would have some responsibilities in connection with implementation of the findings of the report. I heartily concur with this recommendation and hope such a task force can be established as quickly as possible for each of the survey reports subsequent to the submission of the report to the Government of India.

We have discussed the method by which these reports should be distributed to the industry and it was agreed that distribution would be arranged through the appropriate Export Promotion Council. I have therefore reproduced an additional 150 copies over and above the requirement for the Central and State Governments so that adequate supplies of the report will be available for the industry.

The U.S. consultant who assisted the Marketing Research Corporation of India, Ltd. in the performance of this study, Mr. Edward B. Polak, has provided me with his own personal views after having spent a good portion of the last six months in India. I am attaching to this letter a copy of certain sections of his report to me because I believe the Government of India and the industry may find it to be of value in considering the Marketing Research Corporation's report. I believe many of his comments, particularly his thoughts with regard to further action required, are quite relevant.

I hope the material contained in these volumes will be useful to bring about an increase in India's foreign exchange from spices. The U.S. Economic A.I.D. Mission stands ready to offer necessary assistance in the implementation of these findings.

Sincerely yours,

Ludwig Rudel

Ludwig Rudel, Chief
Export Promotion Division

The Marketing Research Corporation of India Ltd.

TECHNICAL ADVISERS :
THE INDIAN INSTITUTE OF PUBLIC OPINION PRIVATE LTD.
 MANAGING DIRECTOR
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 NEW DELHI.

July 26, 1968

Mr. Ludwig Rudel,
 Chief, Export Promotion Division,
 USAID, American Embassy,
 West Building, Chanakyapuri,
 New Delhi.

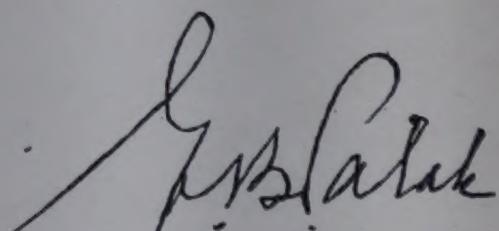
Dear Mr. Rudel,

In accordance with my contract with the United States Agency for International Development, Washington, D. C., I am enclosing my report containing comments and additional suggestions on the survey report prepared by the Marketing Research Corporation of India Ltd.

I trust that you will follow up the recommendations made to the Government of India so that suitable action is taken, as without it, obviously, none of the targets will be reached. If time permits, I will do my utmost to dictate a short additional report on the spice seeds on which I will recommend a short study.

I further trust that the enclosures meet my commitment under the contract to your satisfaction, and may I close with the expression of gratitude and pleasure of working with you, and for the co-operation and assistance received from you and your office staff.

Sincerely yours,



(Edward B. Polak)



Consultant's Report on Export Feasibility Study of Indian Spices

My opinions and comments on the Spices Survey about to be completed and presented by the Marketing Research Corporation of India Ltd. have been formed and formulated by me after working with them in close collaboration since my first arrival in India on this project on March 25, 1968.

At the outset I felt that the wide scope of the inquiry was much too ambitious and unattainable with respect to the procurement of much of the data required in your Contract with the MRCI, because :

- (1) Statistics on each spice in many countries are difficult and sometimes impossible to obtain, are often considerably in arrear and not always reliable and, in the case of pepper, particularly from Indonesia due to smuggling. The Spice Trade has been struggling with these difficulties for years. Government estimates of crops (including India's) are often inaccurate, so that trade estimate's must be evaluated.
- (2) The time allotted for the survey was too short, in which to gather whatever data was available and form conclusions and make recommendations.

I must admit that I am agreeably surprised by what has been produced under these handicaps and limitations.

Although I am reasonably satisfied with the data collected on the various field trips to different countries.....* I feel the trip to Singapore, Indonesia and Australia was poorly scheduled. The visit of 10 days to Australia should have been omitted and instead this time should have been utilized to visit the Lampong district in Sumatra and a local man, Chinese or Indonesian if possible, should have been employed to guide and assist the Indian Research representative to collect data on methods of production, yield, labour costs, warehousing and cleaning and inside local information on the methods employed in exporting and selling. During harvesting time labour from Java is usually imported in the Lampong district of Sumatra and the cost of this labour depends a great deal on the price of rice which is currently very high, which in turn affects the production cost. I realise that research data of this nature is very difficult to obtain, particularly in a competing country and it would take a man with great mental resources to succeed, but the effort should have been made and possibly still should be made.

My specific comments on each category follow :

Pepper :

(a) *Recovery of the U.S. market.* There is no doubt that India can recover this market, provided parity with Indonesian Lampong is restored. Sales would have to be made by a Pepper Consortium, the creation of which is recommended in this Survey, through the leading exporters, who have the cleaning facilities at port of shipment and their American agents protected for their usual one per cent commission, because the contracts and shipments must be serviced upon arrival in the U.S.A. This Consortium would be required in order to reimburse the exporters for the difference in parity between Lampong and Malabar.

(b) *Pepper Board as mentioned in the Survey.* I submit that this Board should be created as an independent Spice Trading Corporation and *not* as part of the State Trading Corporation. Pepper is a commodity traded (and also spe-

* Section Omitted

culated in) all over the world and although India is an important producer, its trade in convertible currencies is small. If the State Trading Corporation were commissioned to manage such a Pepper Board within its confines and trading structure as well as personnel, I submit that it would be most apt to burn its fingers. This Spice Trading Corporation would be called upon to perform at least two *trading* functions :

(1) to buy the pepper required to fill whatever commitments are made with American grinders at the ruling market price. I suggest that this should be done through the leading traders/exporters, to buy as advantageously as possible;

(2) to buy independent of (1) above buffer stocks as recommended in the survey, at (a) a floor price to be decided upon or (b) whenever in the opinion of the Board the price is low enough to warrant purchase or (c) at the ruling market price.

I suggest that in order to operate successfully in an international market, the second alternative (b) is adopted, in order to : (1) influence the international market price (2) enable India to obtain a higher share of the U.S. market. This will automatically result in price support to the Indian grower.

(c) *Parity with Lampung Black Pepper (Indonesia)* : If no parity materialises with Indonesia through Government to Government agreement—and if both countries carry buffer stocks, which should narrow the differential—I submit that in order to make the sales to the U.S.A. the Spice Trading Corporation should (1) take the loss, if this is fiscally possible, or (2) should be empowered to give import entitlements or tax credits to the exporters to equalize the difference between the purchase price in rupees and the sales price in dollars.

I have been advised that there is a separate import licence sector for spices (cloves etc.) and it might be considered simpler to confine the import entitlements to the Spices import licence sector. It should be clear, however, that whatever scheme is adopted, ultimate parity with Lampung is the primary pre-requisite to recover the American market in Pepper....*

(d) *Increased Production and 1971-76 Target* : Ever since I started visiting Kerala in 1947, I have been constantly told that additional acreage for pepper production is simply not available. At any rate planting additional acreage at current costs does not solve any problem as yields *must* be increased and thereby production costs lowered, resulting in increased production at lower cost. Fertilizer, spraying, irrigation will help, but if the new strain of Panniyur I is the answer then cuttings should be placed at the disposal of growers in sufficient volume and low enough costs to induce them to replant vines, not merely when they die out, but when they pass their peak of production. In other words a *crash program* must be started to accelerate production, through greatly increased yield. I want to stress strongly that the targets mentioned in the survey are totally unattainable, unless the yields are increased greatly. There is little use talking about recovering markets and increasing exports, unless sufficient pepper is produced in the first place. Furthermore, I am somewhat concerned about the new strain 'Panniyur I'. In the pepper seminar of 1966-67 I read that test of its non-volatile oil and Pepperine content had not been completed and at this writing I have not seen such tests. Unless such tests show the same characteristics as Malabar black pepper (non-volatile oil minimum 7%) and show that this vine produces pepper with the same taste, the results of planting this strain in volume would be ruinous.

Cardamom :

I am persuaded that in order to increase exports, costs must be lowered by combating disease, for which research must be done and funds be made available and production increased to lower prices to meet the constantly increasing competition of Guatemala. I am also concerned about maintaining the "cardamom

* Section Omitted

coffee" habit in the Middle East atleast at present dimensions, and ensure that the younger generation follow in the footsteps of their elders and not convert any further to soft drinks, which appear to be making inroads. Some sort of promotion campaign should be devised for this purpose, which does not necessarily have to be expensive.

Turmeric :

I was fully aware of the erratic production pattern of Alleppey finger Turmeric with almost yearly alternating over and under-production. Last year the crop was over-produced with correspondingly low prices, resulting in a short crop this year with high prices and some defaults on contracts with the U.S.A. which have been mentioned in the trade. However, I was not prepared to find the same pattern in the much larger production of Madras, and the other varieties, of which India consumes the largest percentage whereas the Alleppey turmeric crop is not consumed in India at all and is entirely exported to the U.S.A. Is this a coincidence or are there relating factors, considering the opposite consumption factors? This should be investigated and analysed. At any rate it is obvious that the entire production must be stabilized at the desired and yearly increasing level, which should result in stable and reasonable prices and correspondingly increasing exports. As recommended in the Survey, this might be accomplished through floor prices, to be established for each section and grade. It certainly should not be difficult to estimate the U.S.A. demand at yearly increasing rate of consumption on the basis of past performance and to gear yearly production accordingly. As far as Alleppey turmeric is concerned it is obviously equally bad to overproduce as to underproduce for the attainment of an increasing export to the U.S.A. which is practically assured, if handled properly.

Ginger :

The idea put forward, to produce 5000 tons of Rio Ginger for domestic consumption and release an equivalent amount of Cochin Ginger for export which in turn would lower the price of the latter through increased availability, sounds attractive, if workable. At any rate it is essential that the price of Cochin Ginger is reduced drastically to meet Nigerian and Sierra Leone competition in the world markets. The means by which to accomplish such reduction must be worked out, whether through import entitlement or otherwise but it is obvious that without it, no market will be recovered or target reached.

Chillies :

In order to comply with the quality requirements mentioned in Para 2 of the summary under the heading "Chillies" they also should be handpicked. There is no reason why a good market could not be developed in the U.S.A., provided an energetic selling campaign is adopted and not merely the traditional method of trying to obtain an order here and there, is followed. I talked at length with Mr. Paramasivan Nadar of the Chillies Export House, Virudunagar, Madras State who I understand is one of the largest, if not the largest, exporter, and he told me that they exported last year to the U.S.A. 80 tons, but only a small quantity to date this year. So far they have already sold 3000 tons to Ceylon. He advised me that they have two crops annually and, although they sell on type sample, they cannot always be sure that the colour is exactly the same, because of interfering rains. I suggested that he write to their New York agents to propose to the large buyers to make contracts of six equal monthly shipments at a fixed price on their type sample with the understanding that if the colour is slightly off, because of rain on any one shipment, an allowance in price should be made by mutual agreement. In that way larger sales are possible and no disagreement or suspicion of shipping inferior quality is created. The above quality clause should be stated on the face of the contract. Each contract of 6 shipments would cover one crop and before expiration a second contract could be made covering the next crop, but only after a type sample of the new crop is available. Their chillies compete with the Japanese Sontaka variety and I am almost sure that

Japan does not sell on such long term contracts, which would give India an advantage and an opening wedge.

MINOR SPICES

This category is entirely misnamed. There are no *minor spices*. *Cassia*, *nutmegs* and *mace* are certainly not minor spices, as they are produced in substantial quantities in the world, although their production in India is presently negligible.

Curry powder is not a spice, but a *blend* of spices, as is *curry paste*. *Celery* seed, *Coriander* seed, *Cumin* seed as well as *Anise* seed, *Dill* seed, *Fenel* seed, *Fenugreek* seed, *Sesame* seed, *Mustard* seed, *Poppy* and *Caraway* seed—the latter two are not produced in India—all come under the category of Spice seeds, about which I will write a separate report.

Curry Powder :

I have heard complaints in Europe that some Indian manufacturers, are not always consistent in their formula, and these buyers impressed on us that consistency of formula is very important and essential. These complaints came from different quarters and countries; therefore, in order to increase sales and acceptability these manufacturers should be impressed with the necessity to keep their formulae consistent.

Cassia :

The cassia produced currently is inferior to the Indonesian, Saigon and Chinese varieties. I have nothing to add to the summary on cassia of which I wrote the last three paragraphs.

Nutmegs and Mace :

The production of these is small at present. I have given samples of both to McCormick & Co who are analysing them in their laboratory and if I receive their report in time, I will add the results of their tests.

Publicity and Public Relations :

I would like to add some remarks to page 14 paragraph 6 of the summary. I suggest that the AGMARK be greatly expanded, both in promotion and in stricter inspection requirements and facilities to implement these requirements, in order to create the AGMARK as a true and great *symbol* representing the Indian image of Indian grown spices and spice seeds of *pure* and *dependable quality*.

Aside of the corrections recommended in the report, the Agmark on pepper exports has proved to be successful and the quality of the pepper, bearing the Agmark label, has generally been satisfactory to buyers abroad. However, the quality of other spices exported often leaves a great deal to be desired and I especially recommend that the Agmark label, incorporating a very strict quality and particularly cleanliness of inspection, should be made compulsory for all exports of spice seeds. These are much too often rejected by the U.S. Food & Drug Administration, because of bird dung and other impurities, which hurts the reputation of Indian spices as a whole. Moreover, the high cleaning charges of these seed shipments represent a sizable amount in loss of foreign exchange.

National Spice Trade Association :

I am greatly in favour of the creation of such Association as recommended in the Survey, along the lines of the American Spice Trade Association....*

* Section Omitted

Supplementary Report on an Export Feasibility Study of Indian Spice Seeds, i.e., Celery Seed, Dill Seed, Sesame Seed, Coriander Seed, Cumin Seed, Fennel Seed, Fenugreek Seed and Anise Seed.

As mentioned on page VIII of my report on the just completed study of Indian Spices, the foregoing all come under the category of *spice seeds*. I attach the import statistics of the United States (published by the Department of Commerce and segregated and published by the American Spice Trade Association) for the year 1966 which illustrate the relative importance in both volume and value of the above spice seeds.

In view of a number of problems which currently exist in the exportation of these seeds, conversely lack of exportation—I strongly recommend that a short supplementary study be made on these specific seeds with regard to their production and availability for exports over the next 10 years. India currently exports a major share of celery seed and dill seed to the United States, but her exports of the other seeds are negligible. I understand from the Marketing Research Corporation of India Ltd. that all the above spice seeds are grown extensively within the country and are mainly used for home consumption. I believe that a greater market can be developed in the exportation of these seeds, if proper measures are taken.

I have made a cursory study on the export feasibility of these seeds as a result of which I suggest that emphasis in the proposed study should be concentrated on the following :

(1) Quality Control :

The Agmark inspection should be expanded to include these seeds and very stringent quality specifications should be promulgated, so that these Indian grown seeds will be preferred to others. To illustrate, I found that there are numerous complaints in the U.S.A. as the celery seed exported there is often too light in weight, and upon investigation, I found that the Bombay shippers extract the real heavy celery which sells at a premium to oleoresin manufacturers, because they obviously produce a higher yield, and the balance is sold to the spice grinders. Whenever there is a surplus of these heavy seeds, they are thrown back in with the others. Conversely, if there is a shortage of heavy seeds, the other seeds are sold as well to the oleoresin manufacturers and they, then, naturally complain that the seeds received are too light.

(2) Cleanliness :

This is the most serious problem existing in export to the U.S.A. and many of the seeds—celery seed, dill seed, fennel seed and fenugreek seed—are only too often detained by the Food and Drug Administration and must be re-cleaned in the U.S.A. which is not only an expensive process but results also in relatively substantial loss in foreign exchange. I inspected the largest cleaning plant in Bombay and the owners of this plant imported up-to-date cleaning machines from the United States, in fact, the same as are being used by the re-conditioners in New York. I examined minutely under a magnifying glass samples of the celery seed which had been cleaned through these machines and which the owners swore by high and low did not contain any foreign matter (bird dung, etc.) and I pointed out to them by cutting the alleged seeds which I had ex-

tracted that some of them were, indeed, celery seeds and others were bird dung which I spotted without cutting because of a slight difference in size, but which I had to cut in order to prove my point to them. It is obvious, therefore, that they do not have a sophisticated knowledge of adjusting these machines, and therefore, either foreign engineers should come to India to train the operators of these machines here or they should send Indian engineers abroad to receive adequate training and instruction at the cleaning plants abroad. There is one old established shipper of celery seed in Amritsar with a high reputation for quality and cleanliness in their shipments which are seldom, if ever, detained by the Food and Drug Administration, which proves that it is not impossible to ship absolutely clean celery seed. By the same token, no such shipper exists in Bombay from where all the other seeds, and particularly dill seed, of which India is the main supplier to the U.S.A., are shipped.

In addition to the foregoing, I found in the cleaning plant in Bombay that abdominal sanitary conditions exist on the premises where these machines were installed—seeds lying on the floor, girls walking bare-footed over them, etc. When I pointed this out, the owners immediately stated that the next time I would come, I would not find these conditions because conveyor belts had already been ordered. It hardly needs mentioning that in as much as all these seeds are for human consumption that not only the best obtainable sanitary conditions must be established in cleaning these seeds, but better still, better methods must be devised and established at the point where these seeds are grown and in harvesting these seeds so that this foreign matter either does not enter these seeds in the first place or if that is impossible, then, atleast, very little of it. As Mr. da Costa very aptly pointed out in the Presentation of the just completed study, Japanese chillies receive the utmost sanitary attention not only when they are harvested, but even when they are planted.

(3) Marketability :

There is no problem in competition of celery seed and dill seed as far as the United States is concerned. But in some of the other seeds, particularly cumin seed, Morocco has pushed India out of the market by under-selling, and incentives may be required to recover the export markets. A particular study should be made of sesame seed which is not now exported at all to the United States. The total imports in the United States in 1966 were 28,201,570 lbs with a value of \$4,637,506. Unfortunately, I do not have the total of 1967 in front of me, but the figures, of course, are available to you from the U.S. Department of Commerce. The best quality of sesame seed is exported by Nicaragua and this seed commands a price of somewhat in excess of 20 cents per lb., whereas seeds from other origins command a price of less than half. It is significant that in 1967, Mexico replaced Ethiopia as the main suplier in the U.S.A. in addition to Nicaragua. Furthermore, 10 years ago, Ethiopia did not export any sesame seed at all to the United States which is entirely comparatively a recent development, as is that of Mexico. India has recently lifted its ban on exports of sesame seed for human consumption and I find it difficult to find any reason why India should not export a substantial quantity of sesame seed to the United States where buyers want white sesame seed without any black seeds. Exporters told me very proudly that they can ship sesame seed with less than 1 per cent black seed, which is, of course, valueless in the United States if a premium price is to be obtained. However, I was also told that a new electronic eye machine is manufactured abroad which could be imported and which automatically picks out any black seeds. I am told that this machine is expensive. But I was also told that the investment in such a machine would be productive because it can be used for other purposes, particularly for cleaning rice.

It is needless to say that a constant watch should be kept on the shifting of trade in the world markets, as the foregoing observation of sesame seed clearly illustrates, not only in spice seeds but in the major spices as well.

AMERICAN SPICE TRADE ASSOCIATION

United States Imports of Merchandise for consumption: Calendar Year 1966
U.S. Dept. of Commerce—Bureau of the Census
(Quantities listed in pounds)

Country of Origin	Net Quantity	Value (Dollars)	Country of Origin	Net Quantity	Value (Dollars)
Paprika, Ground or Unground					
Canada	22,000	8,483	Japan	19,263	5,500
Chile	137,457	32,991	Kenya	19,140	3,542
W. Germany	28,610	9,160		3,810,246	953,966
Hungary	485,161	161,832	Bean, Vanilla		
Spain	5,931,410	2,205,869	Mexico	31,043	124,291
Portugal	143,880	46,909	U. K.	1,086	4,829
Yugoslavia	390,500	119,756	France	11,206	48,476
Greece	65,538	14,393	W. Germany	202	1,338
Rumania	66,138	12,900	USSR	2,208	10,609
Bulgaria	2,321,139	813,566	Turkey	16,962	73,732
Turkey	139,443	45,734	Malaysia	33,297	148,913
Hong Kong	3,960	1,228	Indonesia	122,785	345,417
Japan	1,100	334	Fr. P. Is.	25,481	132,918
Morocco	2,131,143	618,725	Uganda	7,917	35,143
Seychel	22,383	2,625	Mozambique	11,023	51,000
	11,889,862	4,094,495	Madagascar	1,575,536	7,165,753
Pepper, Black Unground					
Canada	44,800	14,676	Rep. S. Africa	13,763	53,317
Jamaica	2,200	880		1,852,329	8,195,736
Haiti	6,545	1,489	Cassia, Cassia Buds, and Cassia Vera		
Brazil	4,439,555	1,534,602	Ceylon	28,967	27,940
U. K.	47,317	17,241	S. Vietnam	442,801	353,526
India	12,769,830	4,829,707	Indonesia	10,054,755	5,830,507
Ceylon	190,400	77,127	Taiwan	56,000	6,300
Malaysia	921,283	342,066		10,582,523	6,218,273
Singapore	102,200	37,495	Cinnamon, and Cinnamom Chips		
Indonesia	15,415,337	5,329,824	N. Antil.	21,781	7,524
	33,939,467	12,185,107	Netherlands	23,584	4,086
Pepper, White Unground			Spain	55,000	20,147
Brazil	273,991	135,481	Ceylon	639,265	747,065
Ceylon	22,400	11,591	Kenya	90,139	13,686
Malaysia	33,600	16,389	Seychel	1,050,836	148,215
Singapore	89,600	43,972	Tanzania	18,859	2,412
Indonesia	3,399,146	1,729,174	Madagascar	390,870	73,753
Ivory Coast	8,580	2,404	Rep. S. Africa	22,586	3,882
	3,827,317	1,939,011		2,312,920	1,020,770
Pepper, Capsicum, Cayenne and Red, Unground					
Mexico	6,499,733	1,207,602	Cloves and Clove Stems		
Haiti	3,278	1,110	Turkey	11,023	3,527
Chile	145,562	29,394	Ceylon	2,240	2,180
Spain	22,000	8,360	Malaysia	49,747	50,434
Italy	10,967	6,776	Indonesia	6,720	6,214
Turkey	363,764	92,744	Tanzania	39,284	16,278
Indonesia	46,541	10,141	Mozambique	25,352	8,113
Taiwan	5,000	1,595	Madagascar	1,963,565	632,395
Japan	2,880,584	704,070		2,097,931	719,141
Nigeria	217,926	41,845	Seed, Celery		
Ethiopia	44,092	9,400	France	163,903	61,524
Uganda	299,327	138,898	India	2,561,452	400,311
Kenya	45,702	11,846		2,725,355	461,835
Tanzania	111,223	30,902	Seed, Whole Mustard		
Madagascar	8,982	5,597	Canada	50,261,449	3,114,176
	10,704,691	2,300,280	Denmark	1,005,348	92,352
Pimento, Unground			U. K.	219,467	27,525
Mexico	74,567	77,083	W. Germany	33,334	3,700
Guatemala	412,224	353,849	Italy	258,783	36,328
Br. Hond.	76,549	41,510	Bulgaria	214,803	31,995
Honduras	299,044	270,843	Ethiopia	389,692	57,751
Nicaragua	5,010	4,180		52,382,876	3,364,827
Jamaica	1,047,836	1,022,165	Seed, Poppy		
Spain	11,023	3,905	Denmark	45,000	11,231
	1,926,253	1,773,535	Netherlands	2,500,600	620,620
Pepper, White, Black or Red, and Pimento Ground			Austria	22,500	4,845
Canada	3,000	575	Poland	1,060,100	281,776
Mexico	3,768,843	944,349	Rumania	1,393,200	321,476
			Turkey	1,831,500	340,917
				6,852,900	1,580,865

Contd.

Country of Origin	Net Quantity	Value (Dollars)	Country of Origin	Net Quantity	Value (Dollars)
		U. K.			
Seed, Sesame					
Mexico	1,773,942	729,419	Mace	900	7,440
Guatemala	999,800	123,552	LW WW I	208,439	681,555
Salvador	246,000	33,555	Netherlands	29,120	49,534
Nicaragua	9,971,300	2,068,072	Malaysia	21,046	26,595
Brazil	2,905	405	Singapore	8,960	14,381
Lebanon	59,500	10,678	Indonesia	2,240	3,830
Israel	22,366	4,353	Denmark	465,652	565,178
Arabia	150,000	31,518		2,209	3,194
Japan	2,364	1,272		529,227	662,772
Egypt	221,400	20,324	Anise Seed		
Sudan	1,850,781	176,180	Spain	223,253	65,328
Ethiopia	12,891,212	1,436,078	Mexico	4,497	1,619
Uganda	10,000	2,100	Turkey	14,330	2,568
	28,201,570	4,637,506	Yugoslavia	10,773	1,633
Sage, Unground					
Italy	26,214	4,394	Tanzania	9,052	1,649
Yugoslavia	819,244	246,984	Syria	4,200	519
Albania	591,580	96,163		266,105	73,336
Greece	4,736	1,445	Coriander Seed		
Turkey	37,354	2,879	Rumania	1,525,666	118,198
	1,479,128	351,865	Morocco	1,652,868	43,893
Nutmeg, Ground and Unground			Argentina	196,485	19,520
LW WW I	488,619	494,995	Nigeria	35,056	6,220
Trinidad	4,480	5,376	Algeria	32,769	3,293
Netherlands	61,341	62,131	India	21,846	2,195
Belgium	21,893	23,206		3,464,690	293,319
W. Germany	43,872	54,134	Cummin Seed		
Ceylon	109,460	46,858	Syria	187,227	61,551
Indonesia	3,443,859	2,799,579	Iran	2,574,588	813,236
Japan	6,720	7,396	India	346,581	123,753
	4,180,244	3,493,675	Japan	110,230	40,234
Caraway			Turkey	62,502	19,321
Netherlands	6,189,746	1,100,471	Singapore	5,512	1,964
Poland	955,339	158,550	Lebanon	34,124	12,336
Lebanon	5,512	780	Morocco	3,858	1,382
	7,150,597	1,259,801	Indonesia	127,559	35,984
Ginger Root, Whether or not ground, not Candied or Preserved				3,452,181	1,109,821
Panama	4,000	360	Dill Seed		
Jamaica	703,523	244,914	India	545,211	58,258
LW WW I	2,790	326	Netherlands	1,000	309
Austria	11,200	3,019	Nepal	22,446	2,190
India	381,917	109,760	Mexico	108,064	24,971
Thailand	3,600	360	W. Germany	276	259
Hong Kong	29,400	377		676,997	85,887
Taiwan	86,250	10,331	Fennel Seed		
Japan	15,762	2,920	India	599,353	105,689
Man. Is.	3,850	403	Brazil	43,606	3,000
Australia	11,950	4,579	Italy	300	270
BWP Is.	654,280	89,305	Bulgaria	32,572	5,800
Sierra Leone	436,080	109,972	W. Germany	40,007	5,896
Nigeria	2,878,847	372,799	Argentina	49,218	7,098
	5,223,404	952,425		765,056	127,753
Origanum, Crude or Not Manufactured					
Canada	43,065	3,267	Basil		
Mexico	561,561	113,261	Belgium	11,619	3,979
Dom. Rep.	110,479	20,201	France	23,034	7,944
France	16,408	4,784	Hungary	98,924	27,296
W. Germany	10,583	4,829	Yugoslavia	4,209	1,071
Spain	4,020	1,194		137,786	40,289
Portugal	24,810	3,208	Laurel Leaves		
Greece	1,746,772	578,234	Turkey	523,697	89,166
Turkey	6,392	1,449	Greece	11,023	9,017
	2,524,090	730,447		534,720	98,183
Cardamom					
Malaysia	2,500	4,949	Rhyme		
Guatemala	112,796	357,990	France	405,184	110,835
Costa Rica	12,287	39,490	Spain	368,772	51,377
India	48,127	183,729	Turkey	10,800	1,461
Ceylon	18,420	53,474		748,756	163,672
Honduras	12,580	30,649	Turmeric		
Salvador	300	1,034	India	3,445,077	451,500
Sweden	529	2,800	Jamaica	228,462	22,191
			Haiti	120,892	13,009
				3,794,431	486,889

The Marketing Research Corporation of India Ltd.

TECHNICAL ADVISERS :
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August 17, 1968

Dear Mr. Rudel,

I submit herewith in fulfilment of our obligations under contract No. AID/386-1135 dated 18th January, 1968 our final report on an Export Feasibility Study of Indian Spices.

My colleagues and I take this opportunity of thanking you and your associates warmly for the generous manner in which you have assisted us in the execution of this challenging assignment.

Sincerely yours,

Sam da Costa

(E. da Costa)
Managing Director

**SURVEY
OF
INDIA'S EXPORT POTENTIAL
OF
SPICES**

prepared under the guidance of
THE EXPORT PROMOTION DIVISION
U.S. Agency for International Development, New Delhi
for
THE MINISTRY OF COMMERCE, GOVERNMENT OF INDIA

THE MARKETING RESEARCH CORPORATION OF INDIA
2-A, NATIONAL INSURANCE BUILDING
PARLIAMENT STREET, NEW DELHI

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PREFACE

In January, 1968, the Marketing Research Corporation of India, was entrusted by the United States Agency for International Development with a comprehensive project designed to assess globally export possibilities for Indian spices. This was one of seven studies similarly designed to assist the Government of India to formulate suitable policies in order to increase India's export earnings particularly in convertible currencies for the periods ending in 1971-72 and 1975-76 separately.

The spices study like all the others, was designed to assess all relevant factors both in supply and demand. Its method was inter-disciplinary, evaluating from several approaches the factors in export such as production, consumption, comparative prices, taxation including tariff barriers abroad, packaging, processing and transportation, quality control, including Government controls and regulations, patterns of distribution, the methods of export promotion as in operation at present, research and product diversification and in outline the pattern of investments. The spices covered by the study were: Pepper, Cardamom, Ginger, Turmeric and Chillies (Major Spices) and Coriander, Aniseed, Cassia, Garlic, Mace and Nutmeg, Tejpata, and Curry Powder and Paste (Minor Spices).

The project was directed by me as the Managing Director of the contracting research agency. My main colleagues on this study were S. P. Ahuja, S. P. Chopra, J. S. Alva, A. I. Korba, A. Ramamurthy, and V. Ramalingam. They were assisted in their work by V. P. Choudhry and T. Ramalingam Pillai.

Six members of the survey team went abroad in the course of the project. They covered respectively, Japan, the United States and Canada; the United Kingdom, France, Belgium; Sweden, West Germany and the Netherlands; Italy, Libya, U.A.R.; Kuwait, Bahrain, Saudi Arabia, Aden; and finally, Ceylon, Singapore and Australia. We are happy to be able to report that they received in all these countries generous co-operation from institutions and individuals visited.

The study, it is believed, is the most comprehensive yet undertaken in this field although it was limited by the time available which was roughly six months. Thus the facts presented relate to those available to the period of the enquiry from January to June 1968. Caution should be exercised in extending data, whether on production, prices or exports beyond a period reasonably close to the point of the study. The market projections will need to be continuously brought up-to-date. On the other hand, the recommendations for the organisation of the industry by Government and integration of units within the trade are intended to form a permanent framework in which the modernisation of the industry, which has proceeded all too slowly, can proceed apace. It is on these areas of research application, co-ordination of trade agencies, improvement of standards and in a forward-looking sales approach that major emphasis has been placed. By the same token, there needs to be single-minded central direction of all elements in policy—particularly research and application of standards—for the necessary fusion of currently dissipated effort to achieve the high production goals envisaged. Given this powerful direction, the study arrives at the conclusion that India could double her foreign exchange earnings from the spices studied by 1976.

The design of the study called for an exhaustive apparatus of information collection so as to document fully the courses of action proposed. One of the

major positive conclusions of the study is that, while these objectives are consistently to be pursued, there are still areas, vital for an adequate deployment both of skilled personnel and monetary resources, where, in spite of every effort in the limited time available, adequate data could not be obtained. One of the major weaknesses of the spice industry today is the inadequacy of data on cost of production which can be set against the nearly complete data on selling prices to determine profit margins and incentives currently obtaining. Our own survey of costs was necessarily limited: for pepper, it had to leave out the household sector largely because of the complete absence of any agro-economic research studies on "home grown" pepper which accounts for nearly two-thirds of the crop. In cardamom where plantations provide much more of the supply, practically no representative sample could be drawn since variations from year to year and variations in between plantations are so large that no representative character can be claimed for the profit margins presented in what should have ordinarily been a quite adequate study of 57 units. The indications are clear enough that *katte* disease, climatic factors, suitable soil, and enterprising management are the important variables which determine between themselves the cost of production and the profitability of new cultivation which is strongly recommended. On the other hand, so inadequate is the data particularly on the area affected by *katte* and the consequence of each degree of infestation that a precise formulation in each case of what the loss due to *katte* or the gain from its eradication would be has become impossible. This does not mean that the recommendation for new cardamom cultivation on a large scale is in error. But it does mean that a major investment feasibility study is required to separate out the independent effects of each of the four major variables by a searching enquiry which seems best undertaken by the Cardamom Board to determine precisely which factors in the investment programme should be given priority. The purpose of the study has not been defeated by the great gaps in information on research benefits which can result from control of plant disease, use of new varieties, application of fertilizers and so on, since the study itself belonged, because of its wide canvas, to what might be described as the pre-investment investigation category. This point needs constantly to be stressed. The conclusions for quick action rest upon the sifting of evidence available. It nowhere implies that all the evidence for major new investments is available: indeed, it is deplorable in the field of the application of research on improved varieties and treatment of plant diseases that so little that is precise is currently known. Against the very great detail which has been diligently put together in the field of foodgrains, notably wheat, rice, jawar, bajra and maize, the failure to pursue similar problems in this vital export industry systematically appears to us indefensible.

A major revolution in agro-economic research, technical research application to control plant diseases, examination of soils and then an accounting presentation for new plantation with discounted cash flows, where investments will take time or will involve current losses by the pulling up of older plants whose yield is declining, is written into our conclusions. It is, we believe, the major conclusion of this study that such an effort will yield large rupee dividends quite apart from the additional foreign exchange earned. But, in any case, the large production problems raised by the 1976 export targets make an entirely new approach to the problems of this industry inescapable.

Briefly to assert that the export targets for the spices studied are feasible is not to suggest that they lie in a groove of history and tools exist currently for their attainment. The emphasis throughout is on the virtual impossibility of attaining these targets without forging a new approach to problems of production, quality and price. A major reorganisation of both government and trade agencies is required. A modern scientific management approach must be infused everywhere, testing inputs in a businesslike manner against performance, sifting scientific evidence which, particularly in the agro-economic field,

still leaves much to be desired, and selling hard against competition which is increasingly keen. New tools have to be forged since the old tools seem to have reached the limit of their capacity. The challenge is great, but so also are the opportunities. The country has a major stake in both.

Pattern of the Report

The study has been divided into three volumes. Volume I gives in a summary form the broad coverage of the Report, and major findings of the study particularly in respect of policy reorientation required in the spice trade. The levels of production, consumption and trade; the problems of processing, packaging and publicity; the problems of quality control, and the major investment opportunities that are available in the major spice sector are briefly discussed in this volume. Volume II contains the detailed Reports on the major spices : Pepper, Cardamom, Ginger, Turmeric and Chillies and the minor spices selected ; Coriander, Aniseed, Cassia, Garlic, Mace and Nutmeg, Tejpata and Curry powder and Paste. Volume III gives details of standards regarding quality control as practised in India and in force in some of the important importing countries. This volume also gives some important analytical tests developed by the American Spice Trade Association and recommended for adoption. Brief reports giving present market conditions and future levels of demand as estimated for some of the important countries visited by the Spice Survey Team are also included in Volume III.

Acknowledgements

We are grateful to Mr. Ludwig Rudel, Chief of the Export Division, U.S. AID Mission, New Delhi and his associates for the penetrating design of the study and for much special assistance received at all times during the execution of the project. In particular, the U.S. AID Mission arranged for the Marketing Research Corporation of India to receive the continuous assistance of Mr. Edward B. Polak, a noted authority on spices, who acted as a consultant to the survey team for over three months. Mr. Polak's deep knowledge of markets and his exceptional influence with traders abroad were a major asset at many stages in our work. We also benefited greatly by association of Mr. A. S. Narayanan of the U.S.AID who took a keen and critical interest at all stages of our work.

We also wish to acknowledge our debt to several officials of the Ministry of Commerce of the Government of India, who both on their own and through the Indian Embassies abroad assisted us with information and advice. Our thanks are also due to the Indian Investment Centre, New Delhi which arranged the meetings in Cochin and Bombay in order to enable us to have open discussions with the spice trade after our views had been formulated. These discussions were constructive. We hope they will be fruitful in commanding our report for action by those concerned. Acknowledgements are also due to the Pepper and Ginger Merchants Association, Bombay and Indian Pepper and Spice Trade Association, Cochin that extended us all help in the course of the presentations of the study to leading members of the trade in both areas. Finally, we owe to all those who have cooperated with us, at home and abroad, officials and non-officials, a deep debt for time freely given and for personal interest which was far beyond all expectations.

New Delhi.

17th August 1968.

E. DA COSTA

An Export Feasibility Study for Indian Spices : 1968-1976

I. Introduction

1.1 The beginning of all undertakings is not Finance but, notwithstanding Kautilya, Knowledge. And we need to remind ourselves continuously of Lord Kelvin's warning that we know very little of anything until we can contrive to measure it. In the field of spices, notwithstanding an almost legendary history, there exists currently no continuous factual framework in which either World or Indian production or consumption can be accurately set even since 1960. And for good historical perspective we need to go back for at least twenty years. The first major objective of the current study has, therefore, been to provide an appropriate factual framework in which the changing conditions of world supply and demand can be evaluated.

1.2 In the case of all India's major spices—Pepper, Cardamom, Ginger, Turmeric and Chillies, the waves of history define, so to speak, the ranges of both past, and likely future, short-period performance. In fact, any realistic targets for 1971-72 must grow out of an analysis of peak performances of Indian exports in the last twenty, but more effectively, in the last ten years. Where were these peaks? Why have we lost ground and where? And, most important of all, precisely how great was the fall in 1967 both in volume and value in the case of each of the spices studied? The answers to these questions might be appropriately described as "Operation: Lost and Found".

1.3 Thus far only the barest facts in our lost markets will have been found. We cannot merely by historical studies recover the peaks which, for different reasons in the case of each spice, have thus been described. Reclimbing the peaks calls for quite different disciplines in the study of the apparatus of production, both at home and abroad, and in the competition which we face, which, in important respects, is very different today from what it was when we reached our own summits in these spices. If the identification of the peaks in time is historical, the reattainment of these peaks is a multi-disciplinary exercise in the fields of basic agricultural practices, plant and plant disease research, economic research into costs and productivity opportunities, organisational factors in marketing, elements in fiscal policy and what seems almost more important than all for exports, the maintenance of standards—both technical and commercial—more rigidly demanded than ever before. "Operation: Recovery" which is a strategy for 1971-72 is conceived against the whole spectrum of change which must be initiated to ensure success in an area where strategies for exports have never been integrated all the way from the producer to the buyer in a foreign land.

1.4 The exercise "Operation: Recovery", if it attained its objective, would certainly increase India's foreign exchange earnings by a half and would, therefore, justify itself as an effective short-period strategy. It would not, however, provide either an adequate challenge or commercial opportunity to Indian nationals to develop the unique advantages which Providence has placed in our hands. Why, with some of the best spice lands in the world, has India a lower yield, and

consequently, higher costs per acre than our main competitors? Patterns of new cultivation and commercial operation must be matched over the longer period of the structure of consumption over about a decade in the great consuming countries. Here the quantitative framework must, necessarily, be less definite. But it would spell defeat if, on this account, the will to build supplies adequate to foreign markets were not generated in the next three years. A long-term strategy must be initiated at the same time as we pursue our 1970-71 minimum achievement targets.

1.5 Partly because the peaks in volume have been previously attained, one can plausibly argue that productive capacity to support a similar performance in the future in the case of all Indian spices already exists. In other words in its production component, we are operating in the short-term, till 1970-71, on a proved prototype.

1.6 It is quite otherwise for the longer period ending 1975-76. Here projections are made, while inevitably reflecting past performance, well above the peaks. Productive capacity does not currently exist to support these targets and one of the major findings of this study is to the effect that it cannot be created except by a supreme effort to integrate all the necessary resources: research knowledge, skilled research application to production, new monetary investment, integration of areas of the trade still wide apart on both production and price and concentration on standards in demand abroad. Neither the appropriate production nor the export targets presented below, which this study recommends, can operate without a large infusion of new management over the entire field. The creation of a new framework of operation involves also experimentation in the administrative field: some trial and error is certainly involved. New strategies are also proposed in regard to particular spices in each market. Unlike the targets for 1970-71 which are manageable with relatively little uncertainty, the longer range development and export programme calls for a more challenging display of both enterprise and intellectual resources. This third operation is, therefore, in view of its unfamiliar demands described as "Operation: Discovery".

TARGETS FOR EXPORTS: VOLUME AND VALUE: 1971 & 1976

Spice	1967-68		1970-71		1975-76		
	Volume in Peak Year (in Tonnes)	Volume in tonnes	Earnings in Foreign Exchange (Rs. crores)	Volume in tonnes	Earnings in Foreign Exchange (Rs. crores)	Volume in tonnes	Earnings in Foreign Exchange (Rs. crores)
Pepper	26000(1965-66)	24868	13.02	30000	18.00	36000	21.60
Cardamom	2310(1963-64)	1536	7.16	2300	9.66	2650	11.10
Ginger	9889(1956-57)	3823	1.28	9000	2.30	13000	3.30
Turmeric	13150(1956-57)	5730	1.32	16500	4.10	20000	5.00
Chillies	12086(1963-64)	6986	2.05	15000	4.40	18000	5.30
Coriander Seed	8393(1961-62)	2538	0.44	8500	0.90	15000	1.80
Aniseed	643(1963-64)	7	neg	650	0.10	800	0.10
Cassia	79(1960-61)	117	0.04	200	0.08	300	0.12
Garlic	2036(1961-62)	1018	0.18	2000	0.30	2500	0.40
Tejpata	696(1964-65)	181	neg.	400	0.01	500	0.02
Nutmeg & Mace	11(1966-67)	5	neg.	15	0.01	25	0.02
Curry Powder and Paste	1794(1962-63)	1250	0.51	2500	1.00	4000	1.50
TOTAL Other Spice Seeds			26.00 0.98	6000	40.86 1.50	8000	50.26 2.00
GRAND TOTAL			26.98		42.36		52.26

II. Production and Trade

I. India's Production and Exports

2.1 The tables which follow present in a comprehensive and concise manner the place that Indian production plays in determining India's share of world production and world trade in respect of all India's major spices. It will be noticed that at present India's share of world production in all cases is below the peak: so, indeed is India's share of world exports though the peaks of our share in exports and the peaks in our production are not generally the same. This does not disprove the argument that our own production is a major determinant of our capacity to export. It only indicates that other factors such as the production and price of our competitors' products are also major elements to be considered. In the detailed studies which follow this general report, the inroad that foreign competition has been able to make into our exports since our peak performance year are separately analysed. Here only the general production/export potential relation for all major spices is presented.

2.2 It is a major conclusion of this study that in all the major spices, India has not adequate production of the required grades to supply all the demands currently available at an "advantageous" price; that is, profitable areas of expansion of exports exist for all major spices which currently are not exploited because sufficient supplies of the standards required are not currently available. In the case of pepper, this hiatus is most apparent in respect of Malabar Bold and Extra Bold: for cardamom it is for Alleppey Green: for ginger, it is for the Cochin variety, though here a price reduction will also be necessary: for turmeric it is for Madras: for chillies, it is for varieties of Sannam still to be graded by ASTA standards for acceptance in the United States. The increase of production in each case to the levels suggested in the report will not accomplish the export targets by themselves. But without the production, a competitive price will be hardly possible; both volume and price of our spice exports, therefore, turn on our capacity to fill the major production gaps indicated.

2.3 The graphs attached show the manner in which in the case of pepper, cardamom, ginger, turmeric and chillies production and exports are related. The ratio of exports to production, varies slightly from year to year for pepper and cardamom and, percentagewise, markedly for ginger, turmeric and chillies. An intermediate figure between the highs and the lows previously recorded has been chosen as the most appropriate ratio for 1970-71 and 1975-76. But in all cases as the graphs show, production growth must be extended beyond exports growth to permit of a rise in domestic consumption. Over the years since we have fallen from our peaks, a major factor has tended to be the rise in domestic consumption which, even where it has not reduced the volume of the export surplus has markedly affected price and, therefore, some competitive capacity.

2.4 After calculating likely growth of domestic consumption, production targets have been designed to allow export strategy to be unaffected by the pulls of the domestic market. The only manner in which export prices can be maintained both competitive and stable is to provide safe margins for export after meeting all reasonable domestic needs.

PEPPER—Some important magnitudes

Quantity (Q)=in '000 tonnes
Value (V)=in Million U.S. \$.

	1950*		1960		1965		1970		1975	
	Q	V	Q	V	Q	V	Q	V	Q	V
1. World Production	42	150.4	59	74.4	90	95.0	109	88.9	135	110.2
2. World Exports	25	89.5	40	51.3	70	73.9	84	68.5	101	82.4
3. Indian Production	22	78.8	28	35.9	35	36.9	40	32.6	50	40.8
4. Indian Exports	13	46.6	19	24.4	26	27.5	30	24.5	36	29.4
5. Major Competitors:										
(a) Indonesia	6	21.5	13	16.6	13	13.7	24	19.6	29	23.7
(b) Malaya, Singapore Sarawak	3	10.7	4	5.1	18	19.0	15	12.2	18	14.7
(c) Brazil	—	—	2	2.6	8	8.4	10	8.1	12	9.8
(d) Others	3	10.7	2	2.6	5	5.3	5	4.1	6	4.9
Total:	25	89.5	40	51.3	70	73.9	84	68.5	101	82.4
6. Major Importing countries:										
(a) U.S.A. & Canada	14	50.1	20	25.6	22	23.2	25	20.4	27	22.0
(b) Europe	5	17.9	8	10.3	15	15.9	18	14.7	23	18.8
(c) USSR & East Europe	neg	—	7	9.0	13	13.7	20	16.3	22	17.9
(d) Other countries	6	21.5	5	6.4	20	21.1	21	17.1	29	23.7
Total:	25	89.5	40	51.3	70	73.9	84	68.5	101	82.4

* Represents average of 1950-52.

Note: Average prices used for value figures are:

1950: 162.4 Cents a lb.
1960: 58.2 Cents a lb.
1965: 47.9 Cents a lb.
1970: 37.0 Cents a lb.
1975: 37.0 Cents a lb.

PEPPER—Some important magnitudes

(Percentages)

	1950	1960	1965	1970	1975
1. World Exports as % of world production:	59.5	69.0	77.8	77.1	74.8
2. Indian production as % of world production:	52.4	48.3	38.9	36.7	37.0
3. Indian exports as % of Indian production:	59.1	67.8	74.3	75.0	72.0
4. Indian Exports as % of world exports:	52.0	47.5	37.1	35.7	35.7
5. Major Competitors—percentage shares in world exports:					
(a) Indonesia	24.0	32.5	18.6	28.6	28.7
(b) Malaya, Singapore & Sarawak	12.0	10.0	25.7	17.9	17.8
(c) Brazil	—	5.0	11.4	11.9	11.9
(d) Others	12.0	5.0	7.2	5.9	5.9
Total (including India)	100.0	100.0	100.0	100.0	100.0
6. Major importers—percentage shares in world imports:					
(a) USA & Canada	56.0	50.0	31.4	29.8	26.7
(b) Europe	20.0	20.0	21.4	21.4	22.8
(c) USSR & East Europe	neg.	17.5	18.6	23.8	21.8
(d) Other countries	24.0	12.5	28.6	25.0	28.7
Total:	100.0	100.0	100.0	100.0	100.0

CARDAMOM : WORLD PRODUCTION AND EXPORTS

('000 tonnes)

	1951	1960	1965	1970	1975
World Production	2.42	5.42	4.10	5.40	6.15
World Exports	1.22	2.57	2.16	3.10	3.57
Indian Production	1.50	3.30	2.00	3.00	3.50
India's Share of World Production %	61.98	60.89	48.78	55.56	56.91
Indian Exports	0.71	1.92	1.35	2.30	2.65
India's Share of World Exports %	58.20	74.74	62.50	74.19	74.23
Exports : Major Competitors					
(a) Ceylon	0.15	0.16	0.14	0.20	0.32
(b) Guatemala	—	0.45	0.43	0.45	0.45
(c) Thailand	0.36	0.04	0.14	0.15	0.15
Imports : Major Markets					
(a) Kuwait	NA	0.38	0.29	0.46	0.50
(b) Saudi Arabia	0.15	0.68	0.49	0.80	0.95
(c) Sweden	0.10	0.29	0.22	0.24	0.30

GINGER: PRODUCTION AND TRADE†

('000 tonnes)

	1950	1957	1960	1965	1971	1976
1. World Production	16.30	17.60	32.90	46.40	60.90	73.70
2. World Exports*	5.55	11.76	6.75	8.48	14.15	19.15
3. Indian Production	15.10	16.00	16.90	21.50	28.00	35.00
(a) India's Share of World Production %	N.A.	N.A.	51.40	46.30	46.00	47.50
4. Indian Exports	1.63	9.76	4.13	3.97	9.00	13.00
(a) India's Share of World Exports %	29.40	83.00	61.20	46.80	63.60	67.90
5. Exports: Major Competitors						
(a) Jamaica	1.17	0.86	0.78	0.88	0.90	1.00
(b) Nigeria	0.46	0.46	1.28	2.80	3.10	3.70
(c) Sierra Leone	2.29	0.71	0.56	0.82	1.15	1.45
6. Imports: Major Markets						
(a) U.S.A.	1.73	1.70	1.40	1.66	2.50	3.00
(b) U.K.	1.83	1.66	1.22	2.47	2.60	3.40
(c) Aden	0.66	3.08	2.25	1.89	—	—
(d) Saudi Arabia	0.66	1.62	0.43	0.94	4.10	6.10

1. India and Jamaica

†Excluding Mainland China

2. India, Jamaica and Sierra Leone

* Major Exporters that is India, Jamaica, Nigeria and Sierra Leone only.

TURMERIC: PRODUCTION AND TRADE

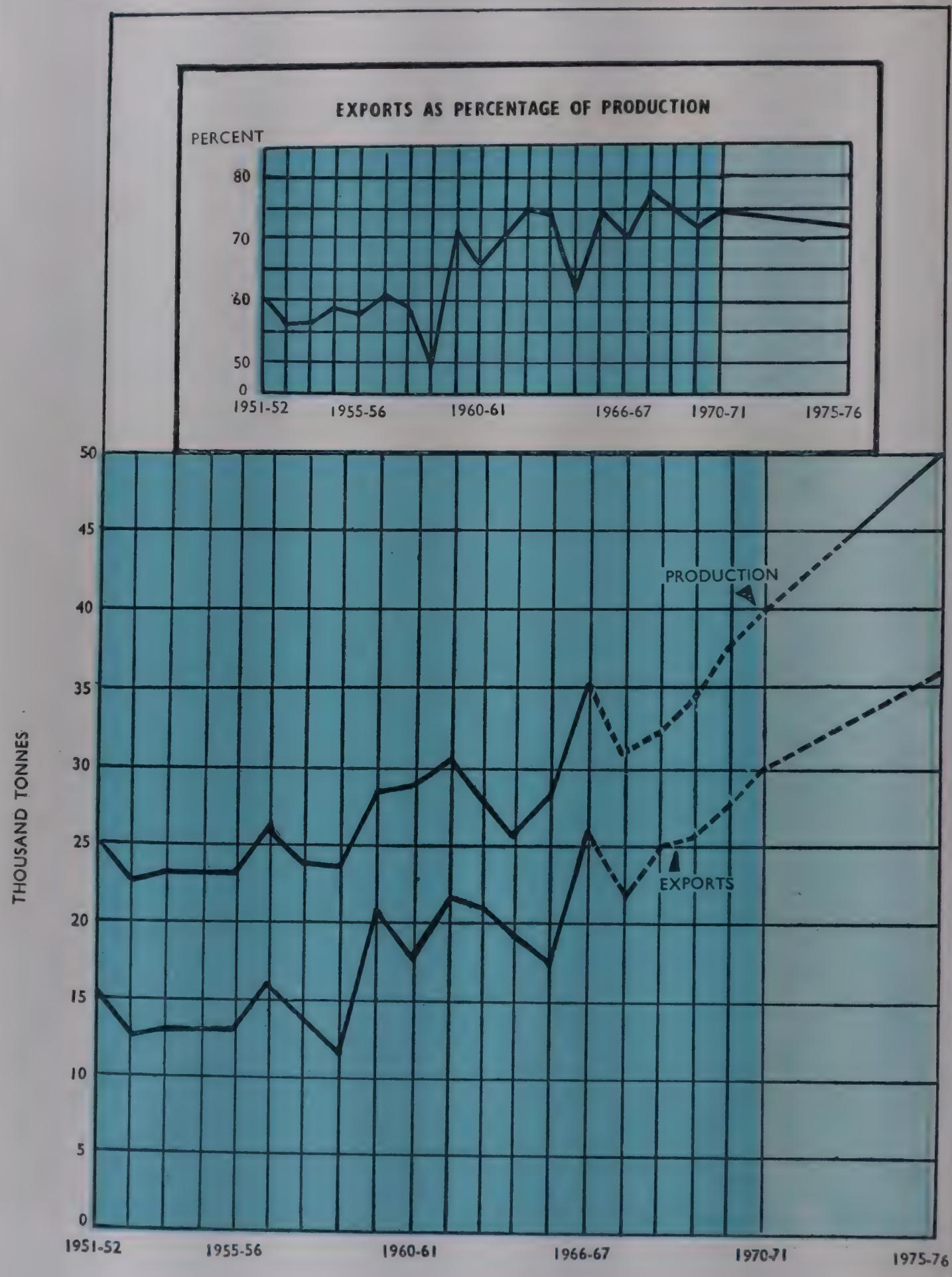
(in tonnes)

	1957	1961	1965	1971	1976
1. World Exports	11495	5029	13371	19500	24000
2. India's Production	127000	86000	128000	160000	180000
3. India's Exports	11078	3460	10403	16500	20000
India's Exports as percentage to (1)	96.4	68.8	77.8	84.6	83.3
4. Exporters: Major competitors					
(a) Pakistan	nil	677	1698	1500	1800
(b) Taiwan	336	604	688	700	750
(c) Burma	N.A.	56	257	250	350
(d) China (Mainland)	N.A.	N.A.	112	400	800
5. Importers: Major Markets					
(a) Ceylon	1038	1198	1325	2000	2400
(b) Middle East	3788	2393	6545	8500	10000
(c) U.S.A.	749	1181	1475	2200	2600
(d) Japan	954	1268	1862	2500	3000
(e) USSR & Eastern Europe	—	—	—	1500	2000

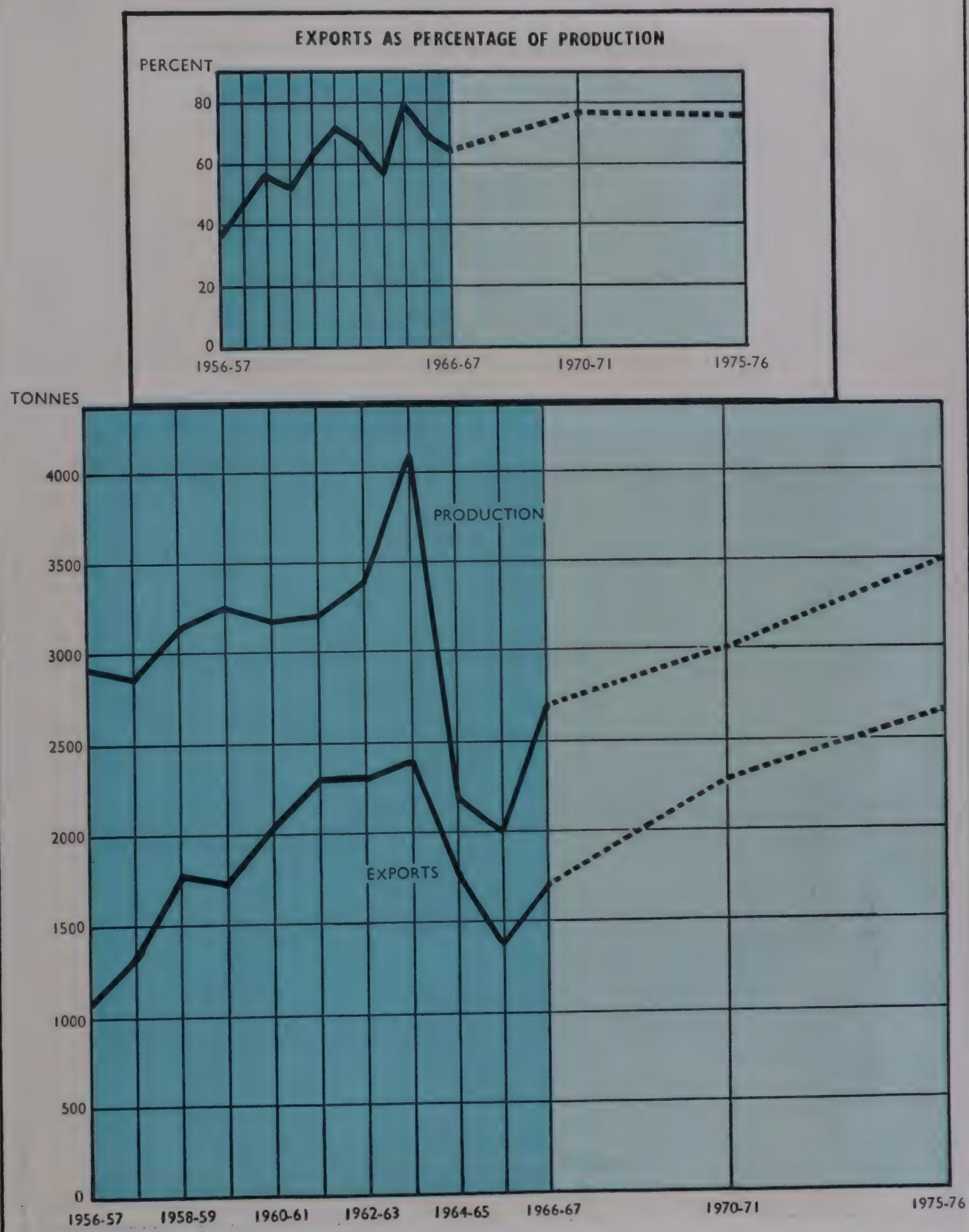
CHILLIES: WORLD PRODUCTION AND TRADE

	1950	1960	1965	1970	1975
Indian Production ('000 tonnes)	351	419	383	450	500
Indian Exports (tonnes)	3106	8364	9532	15000	18000
Indian Exports as percentage of production	0.9	2.0	2.5	3.3	3.6
Production in other Countries					
Thailand ('000 tonnes)	—	47	74	60	65
Japan "	—	—	7	4	5
Mexico "	—	—	21	22	25
Burma "	—	—	17	18	20
Major Exporters					
Japan (tonnes)	813	3353	4092	4000	4000
China "	1270	1829	3150	2000	2000
Mexico "	1219	1727	2743	2000	2000
Thailand "	6198	5029	1575	2500	2500
Indonesia "	—	2083	508	1000	1000
Major Importers					
Ceylon (tonnes)	—	8819	14129	20000	20000
U.S.A. "	—	3571	4822	7000	9000

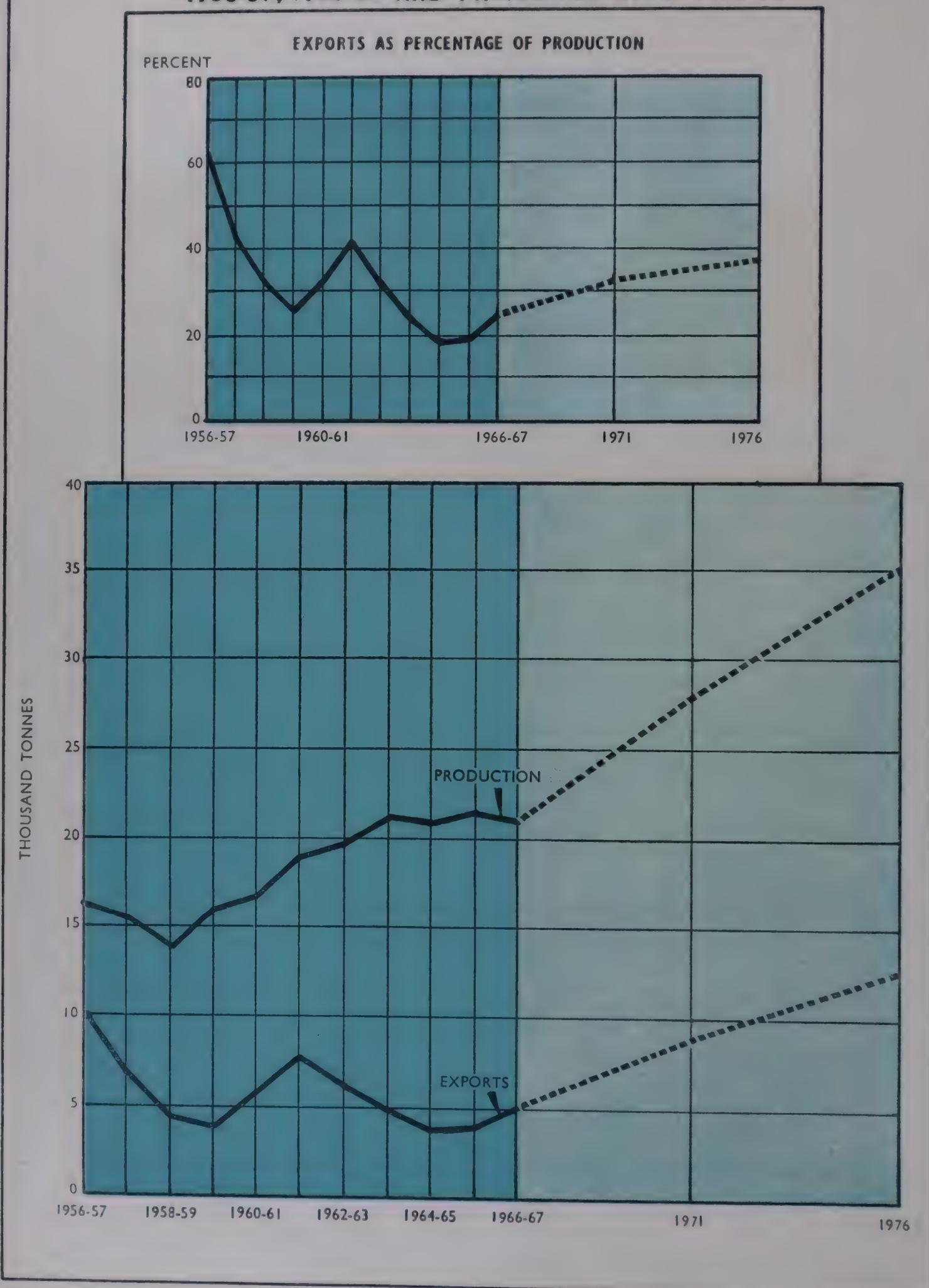
PEPPER
PRODUCTION AND EXPORTS
1951-52, 1966-67 AND PROJECTION UPTO 1975-76



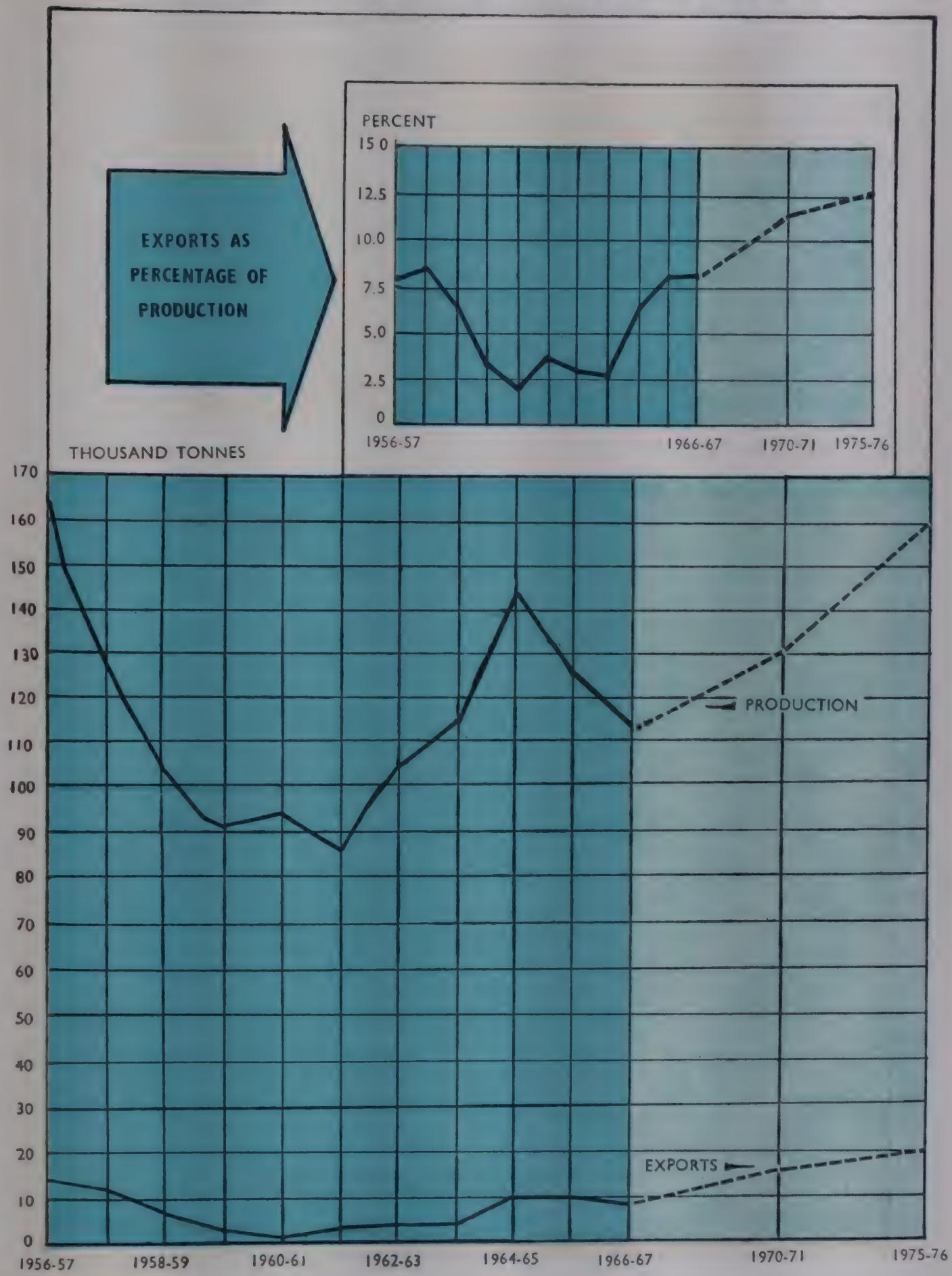
**CARDAMOM
PRODUCTION AND EXPORTS
1956-57, 1966-67 AND PROJECTION UPTO 1975-76**



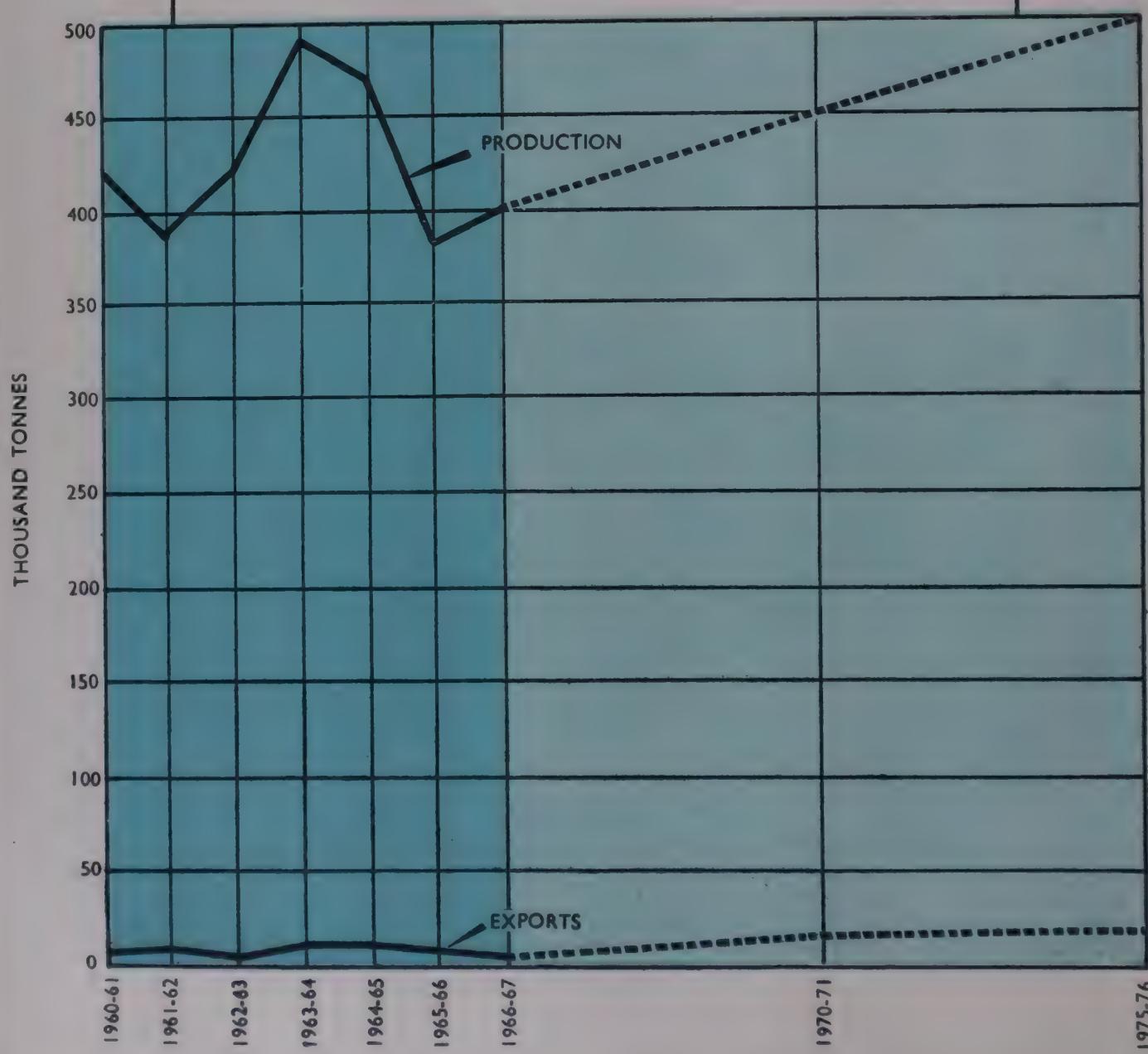
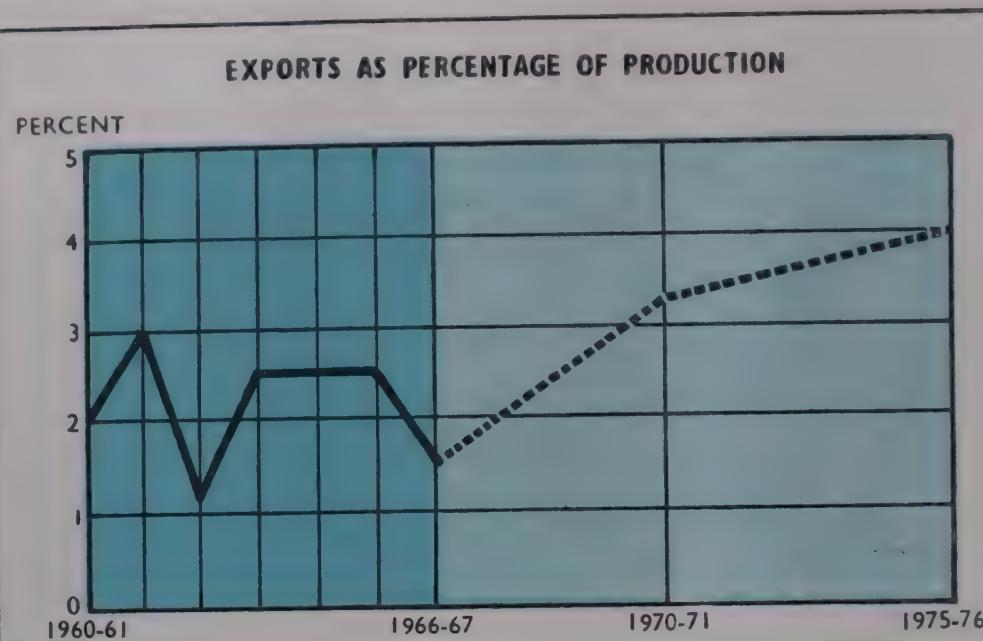
GINGER
PRODUCTION AND EXPORTS
1956-57, 1966-67 AND PROJECTION UPTO 1975-76



**TURMERIC
PRODUCTION AND EXPORTS
1956-57, 1966-67 AND PROJECTION UP TO 1975-76**



CHILLIES
PRODUCTION AND EXPORTS
1960-61, 1966-67 AND PROJECTION UPTO 1975-76



II. The Pattern of World Demand

The World Consumption Level

2.5 There is no general relation between income and the consumption of spices. Indeed, some quite extraordinary paradoxes exist in the correlation of per capita income with such consumption in various countries. Thus, a developing country, Ceylon, with an income of less than \$130 per capita consumes more chillies per head than any other country in the world. The figure for consumption in Ceylon is 3316 gms. per head against 50 gms. per head in the U.S.A. with a per capita income of \$ 2893 per head. It might be added that Indian consumption is of the order of 800 grams per head, about sixteen times that of the U.S.A. So far as world trade is concerned, Ceylon also dominates the field with well over half of the world's trade in terms of imports. This is not the only case where national income and national consumption are unrelated.

2.6 In the case of *cardamom*, consumption in Saudi Arabia at 62 gms. per head and of Kuwait at 564 gms. per head exceeds that of every affluent country including Sweden and Finland which have had a long use of cardamom seed in confectionery. In the case of ginger, the Middle East consumption per capita is higher than that of other "affluent" or high income countries. This also applies to turmeric where consumption per capita is again higher in Ceylon than in any other country except India which is very much the greatest producer. In the case of consumption of pepper, for example, some countries in Western Europe and Japan are relatively small consumers per capita against a relatively high consumption in Greece, and Algeria among others.

2.7 There are, however, fairly steady associations of consumption of spices with income growth in the same country. Indeed, there is practically no case discernible of a country's suddenly changing its eating habits to the exclusion of spices. There are apparent fluctuations as between two years largely to be explained by variations in stocks or inventories, but the general pattern is one of growth of each market in terms of population accelerated by preferences of younger people. It is in the light of this association that it has been possible to build up a global rate of consumption in the light of probable income growth in each of the markets concerned. This figure, however, is largely indicative: each market and each spice needs to be studied separately and the growth pattern of each spice in each country forms the basis of the country reports set out in a separate volume. Two points need here to be stressed. Spice consumption either between countries or in the same country does not change or fluctuate violently: it is quite otherwise with spice prices. Prices of spices are sometimes quite stable over short periods like two to three years, but over a decade there is hardly a spice not affected by a large amplitude in price fluctuations. Thus one might conclude that the inelasticity of demand is offset by large variations in supply from time to time so that "spot" availability often dictates sharp changes in prices in leading markets. The stabilisation of prices thus emerges as a particular problem in the spice field. On balance, sellers prefer stability: it would seem that buyers, contrary to general opinion, are also disturbed by these fluctuations and would be willing to evolve a policy to reduce their severity. Only speculators, who are tending to lose their influence, have an interest in price fluctuations. The means to abate their influence are considered separately.

TABLE I
ESTIMATED RATE OF GROWTH OF SPICE CONSUMPTION IN DIFFERENT COUNTRIES: 1968-75

Countries	Rate of Growth of National Income		Net Food Supplies per capita in Kgs. per year	Estimated rate of growth of National Income	Estimated growth of food Consumption	Estimated rate of growth of consumption of Spices	
	1950-60	1960-65				Cereals	Meat
Developed Economies							
Austria	5.7	4.0	99	64	4.5	3.0	3.0
Belgium	3.0	4.8	84	66	5.0	3.5	3.5
Canada	4.3	5.4	67	86	5.0	3.0	3.0
Denmark	3.3	4.7	75	63	4.5	3.0	4.0
France	4.4	5.1	98	77	5.0	3.0	3.0
Germany	7.9	4.9	73	66	5.5	3.0	3.5
Italy	5.2	4.8	131	35	5.0	3.0	5.0
Japan	9.0	9.6	147	10	9.0	3.0	8.0
Netherlands	4.8	5.0	73	51	5.0	3.0	3.5
Norway	3.6	5.6	69	52	5.5	3.0	3.5
Sweden	3.3	5.0	69	52	5.0	3.0	3.5
Switzerland	4.4	5.1	87	64	5.0	3.0	3.5
U.K.	2.5	3.0	78	74	3.5	3.0	3.5
U.S.A.	3.3	4.7	66	100	4.0	3.0	3.0
Developing Economies							
Argentina	3.1	3.3	120	97	3.5	3.0	3.0
Brazil	5.8	4.4	113	28	5.0	3.0	5.0
Burma	6.3	4.0	—	—	4.5	4.0	4.0
Ceylon	3.2	3.9	131	2	4.0	3.0	5.0
Chile	2.7	5.1	120	35	5.0	3.0	5.0
Colombia	4.5	4.4	—	—	4.5	3.5	4.0
India	3.7	4.4	142	1	4.5	3.0	6.0
Pakistan	2.7	5.3	167	3	4.5	3.0	5.0
Philippines	5.5	4.5	124	13	5.0	3.0	7.0
Syria	2.6	12.2	158	14	6.0	3.0	8.0
Thailand	6.4	7.0	—	—	6.0	4.0	6.0
Uganda	4.2	3.7	—	—	4.0	4.0	4.0
Centrally Planned Economies							
Bulgaria	9.2	6.6	—	—	7.0	5.0	8.0
China (Mainland)	15.4	—	—	—	6.0	5.0	5.0
Czechoslovakia	7.6	1.7	—	—	5.0	3.5	5.5
Germany, East	8.0	2.3	—	—	5.0	3.5	5.5
Hungary	6.4	5.3	—	—	5.0	4.0	6.0
Poland	7.6	6.1	—	—	6.0	5.0	8.0
Rumania	10.4	8.9	—	—	8.0	6.0	10.0
U.S.S.R.	10.2	6.4	—	—	6.5	5.0	10.0
Yugoslavia	8.5	8.9	196	27	8.0	6.0	12.0

— indicates not available.

2.8 Consumption which concerns India, is reflected in a dominant variable of foreign exchange earned. This has two components, firstly, volume, secondly, price. In the case of pepper and cardamom price variations since 1951 appear on balance more important than volume changes. On the other hand, an increase in earnings over the long haul depends nearly as much on volume as on price. For this study, price must be assumed less under our control than volume. Therefore, production problems are elevated to the first place in the new strategies proposed. Price strategies, however, are only next in importance. They need to be far less global if India's policies are to be effective.

III. The Historical Pattern of India's Exports

2.9 The pattern of competition that India has experienced since 1967 in respect of major spices is shown in the graphs in Chapter IV showing leading exporters and leading importers for each spice. It will be seen that, except for pepper where India's exports practically reached the peak of 1963, performance in 1967 was everywhere substantially below a previous peak: for cardamom in 1962 and for ginger in 1957; for turmeric in 1957 (not in the graph) and for chillies in 1963. It is reasonable to suppose that if, India's production and export apparatus having once achieved these export levels can be attuned to a new effort under somewhat different competitive conditions, it is possible to recover past peak performance. For reasons described elsewhere in the case of pepper and chillies, it is necessary to pass these levels: but in the case of cardamom and ginger slightly lower levels have been accepted because of problems of production.

IV. Ex-Farm Costs of Production and Selling Prices of Major Spices

2.10 A major objective of the study was to determine as nearly as possible on a scientific accounting basis, the costs of production and margins of profitability of India's major spices. After an examination of the various possibilities of obtaining reliable data, it was decided, in line with the outline presented at the commencement of the study, to attempt in depth a study of about 100 production units where fairly reliable data on major components of cost were available. As the field survey developed, it was found this led to a substantial bias in favour of cardamom for which there were 59 cases. The number of pepper farms was 35, turmeric only 9, practically all around Erode and ginger 5. Geographically the samples were concentrated in Kerala and Mysore though Madras (Erode) dominates turmeric. Read with the limitations of availability of data and the limitations both of time and resources, the study of 108 cases presents a quantitative assessment of costs, fairly representative of "plantation" as distinguished from "household" cultivation. It is believed the information, while far from comprehensive, presents a fair average round which costs may be deemed, in the years for an "ordinary" unit chosen to fluctuate. In the pages which follow, the structure of costs is set out spicewise for all the major five spices: pepper, cardamom, ginger, turmeric and chillies, in the manner most conveniently available from the units studied. The itemwise costs are also presented in the form of tables and graphs. These are in the main "maintenance" costs which seem to be fairly stable. Overheads vary widely and it has not been possible to obtain an average figure which is representative.

2.11 The attached tables and the graph show figures indicated on the basis of the survey of the ex-farm costs of production for pepper, turmeric and ginger. No survey was conducted on chillies, but it is believed comparable figures are available elsewhere on the basis of which an estimate of per Kg. costs has been presented. The "ex-farm" costs contain no provision for profit and additional overheads arising from pre-investment and investment expenses before a crop is raised. Figures here vary widely and almost every figure would be contested.

	<i>Ex-Farm cost exclusive of profit and pre-investment costs.</i>	<i>Average Profitability</i>		<i>Average Profitability per Kg. in Rs.</i>
		<i>Estimated price f.o.b.</i>	<i>Assumed average selling price received by exporter to expand markets</i>	
Pepper	1.08	2.16	2.40	+0.24
Turmeric	1.00	2.00	2.10	+0.10
Ginger	1.87	3.74	3.00	-0.74
Chillies	1.25	2.50	2.50	+0.30

It is unwise to add a controversial figure to a fairly well documented figure as this makes the total figure unacceptable by the mere fact of such addition. It would not, however, be unreasonable in estimating f.o.b. costs at an Indian port to add for pre-investment and other costs such as packaging not included in the heads described, a figure of about 50% above that quoted as ex-farm costs. If margins including profits of the cultivator, commission agents and storage fees, transport and wholesaler's margins and packaging are together reckoned at 25% of the final f.o.b. price at a port, one might work tentatively on a cost figure of about twice that of the ex-farm annual revenue costs indicated. In the case of the four spices indicated here—pepper, ginger, turmeric and chillies, one might work for 1967-68 with an average price built up as in the table above. The case of cardamom, which is a major investment opportunity, has been set out separately as an appendix to Chapter IX on "Investment Opportunities". Here profit margins are so large and yield variations so great that an analysis over the last six years has been attempted. There is no doubt that the opportunities for a well managed investment in this field are currently more attractive than in any other area of enterprise in the country.

2.12 This survey of costs and profitability is obviously meagre, but it suggests forcefully two major conclusions.

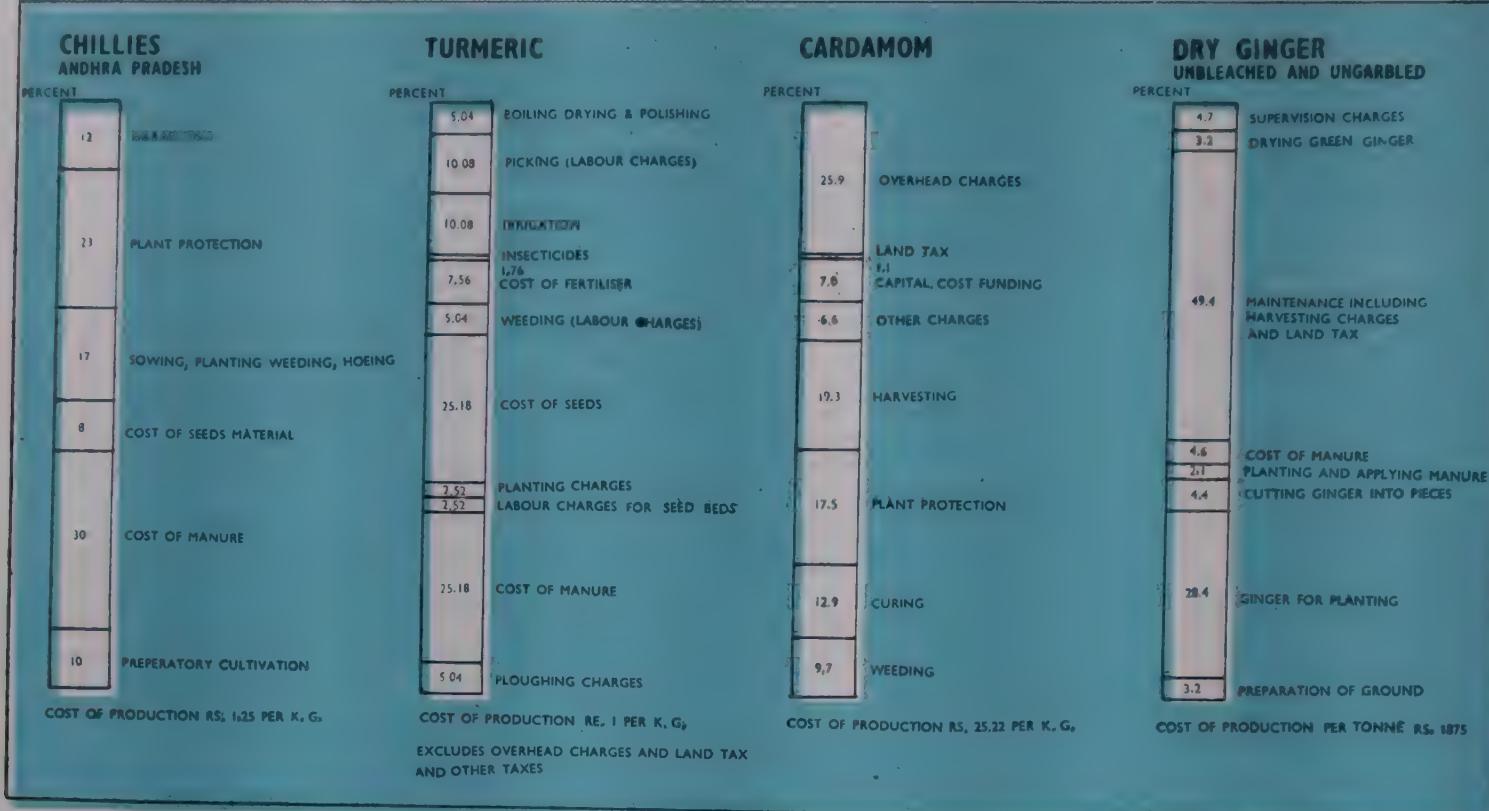
2.13 First, the cost of production and "overheads" except for ginger present, at current prices, no obstacle to exports. Margins of profitability for all major spices, except ginger, are adequate. They are exceptionally high for cardamom.

2.14 Second, the high margin of profitability should attract substantial investment in these areas, but, for many reasons, adequate interest in this industry does not obtain. The long period of gestation or preparation, before a return is obtained, reduces the attractiveness for investors interested in short-term return. Pepper which requires about five to seven years and cardamom four are typical of a current profitability rate being heavily discounted for future uncertainty. There is also a general unawareness of the possibilities of increasing profitability by substantial use of better varieties, improved plant disease treatment and a more careful management of other costs. Furthermore, the knowledge of foreign prices and markets is relatively restricted. Also while the profitability margins are high costs of production have risen steeply in the last three years and one may assume that when heavy replanting takes place, as it must in the case of pepper and cardamom, costs might rise even further. Unless output is increased in the process of replanting, there is a widespread fear that the additional labour costs will place a heavy burden on apparent profits.

In brief, the costs of production figures presented in the succeeding tables suffer from many limitations and must, therefore, be looked upon as indicative guides to the eye and not precise figures already carefully "proved" for purposes of a feasibility or detailed investment study. The purpose of the field survey was merely to seek assurance of a somewhat general kind that margins are available to permit deployment of personal capital in expansion without unduly heavy demands of government or government-sponsored institutional capital. For this general purpose, we think "indicative" figures are sufficient. On the other hand, for investing agencies, the figures presented are quite inadequate and need to be adjusted for numerous factors. Firstly, the sample is inevitably biased in regard to the relatively few farms studied. They are fairly representative in the areas chosen of plantations there. But the pattern of cost cannot be claimed to be representative. Secondly, sample average of costs, such as those presented, do not indicate areas of greater profitability as against submarginal cultivation. In some cases a weighted average may cure this defect. But except in the case of cardamom, the samples are not large enough to permit of a sub-sample presentation. And it will be seen that the variations of yield per acre so large in the case of cardamom (for which more detailed figures are presented in a note on Investment Opportunities) and the standard deviation from the mean so great that the distribution of costs in even 17 selected units is not clustered enough to indicate the nature of average costs. Statistical exercises on the figures presented will yield, in our opinion, no more worthy or reliable data. There are other limitations. In the case of pepper, it has been found impossible to obtain reliable 'fixed' cost data against "costs of cultivation". Yet when pulling up old vines or using new varieties such as Panniyur I, the losses incurred enter into the capital picture. Unfortunately, no discounted cost flows of such operational problems have been prepared by any of the authorities concerned while recommending this course. The extension services, both in respect of pepper and cardamom, are thus of the most rudimentary kind. There is no balance sheet of gains from going modern with improved varieties, fertilisers or a programme of replanting. This is one major area where agro-economic research must be deployed if the cultivator is to be educated to change his current, fairly unproductive, practices.

For example, in the case of pepper it has not been possible to explain more than about one-third of the wholesale sale price due to the current cost of production of pepper. The other two-thirds consists of compounded interests on investments both in land and other inputs like fertilisers, irrigation etc. which are made before the maturity of the vine, transportation charges, handling charges at different points of loading and unloading, storage charges, octroi duties and other taxes and tax provisions, clearing and garbling charges, profit margins at the producer stage and at the wholesaler stage which may be considered marginal, and such further profits/(losses) arising out of unanticipated variations in demand and supply which may share the characteristics of rental income. While we recognise that a feasibility study recommending further investment in a specified field of activity ought to separate these various elements in cost, so as to match these up with the current level of prices, it has not been possible to do so as part of the present study partly because of the broad coverage of the spices study in which the evaluation of costs was but one element, and partly because of inadequacies in information as secured from a brief and hurried survey. Similar limitations exist in regard to other spices like ginger, turmeric, chillies and cardamom where it has again not been possible to explain the current wholesale price level in relation to the costs of production. We believe where we have defined gaps in essential research knowledge we are as positive in our conclusions as anywhere else.

COST OF PRODUCTION OF MAJOR SPICES



COST OF PRODUCTION OF PEPPER IN INDIA COST PER ACRE

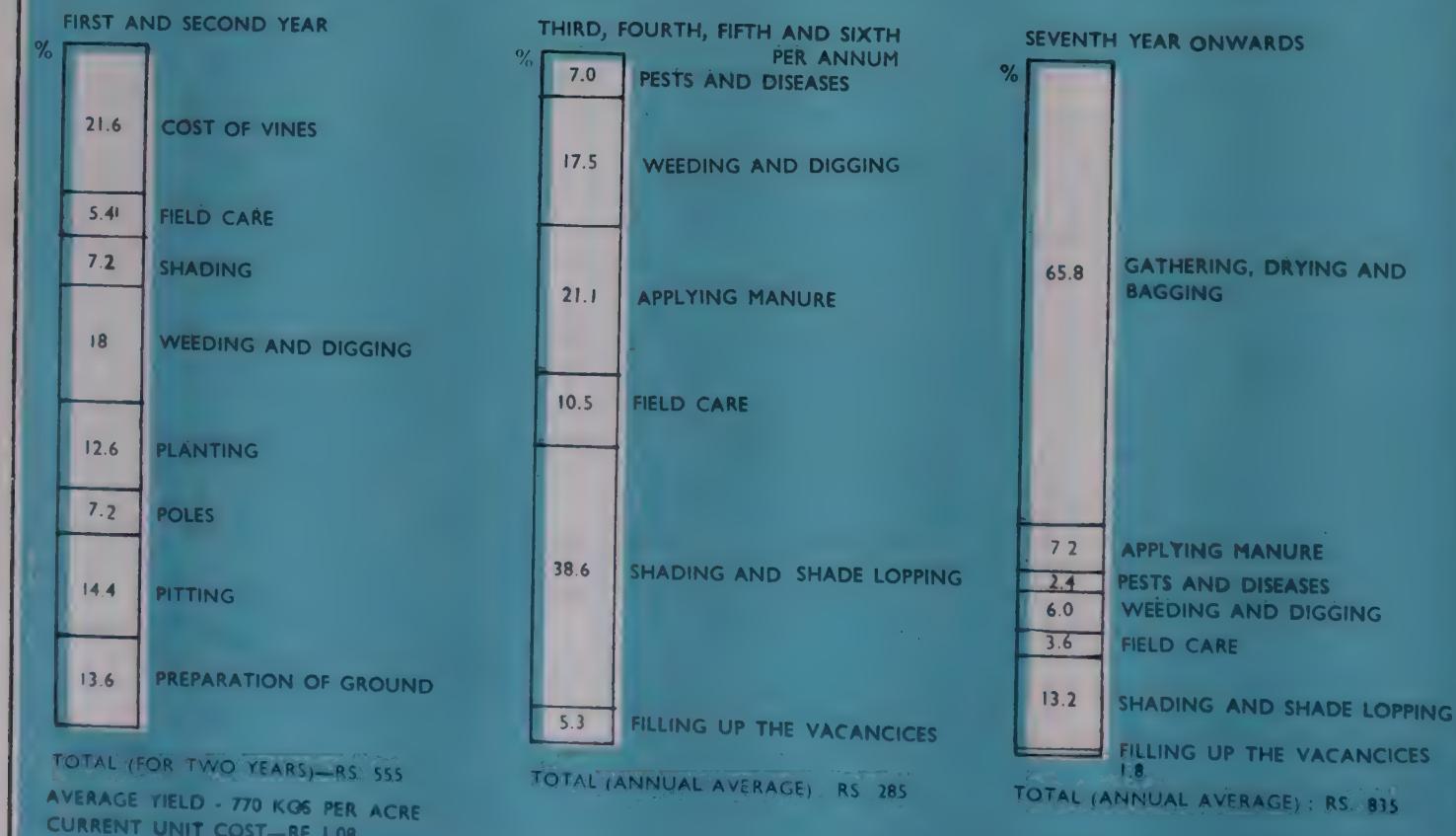


TABLE I
ESTIMATED COSTS OF PRODUCTION OF PEPPER IN INDIA

Item	(Cost per Acre)	
	Cost (Rs.)	Percentage
First and Second Year		
Preparation of land	75.00	13.6
Pitting	80.00	14.4
Poles	40.00	7.2
Planting	70.00	12.6
Weeding and digging	100.00	18.0
Shading	40.00	7.2
Field care	30.00	5.4
Cost of vines	120.00	21.6
Total (for two years)	555.00	100.0
Third, Fourth, Fifth and Sixth Year Per Annum		
Filling up the vacancies	15.00	5.3
Shading and shade lopping	110.00	38.6
Field care	30.00	10.5
Manuring	60.00	21.1
Weeding and digging	50.00	17.5
Pest and diseases	20.00	7.0
Total (annual average)	285.00	100.0
Seventh Year Onwards		
Filling up the vacancies	15.00	1.8
Shading and shade lopping	110.00	13.2
Field care	30.00	3.6
Weeding and digging	50.00	6.0
Pests and diseases	20.00	2.4
Manuring	60.00	7.2
Gathering, drying and bagging	550.00	65.8
Total (annual average)	835.00	100.0

Average yield—770 kgs. per acre.
Current unit cost—Re. 1.08 per kg.

TABLE II
COST OF PRODUCTION OF DRY GINGER IN INDIA
(unbleached and ungarbled)

Item	(Cost per acre)	
	Cost (Rs.)	Percentage
Preparation of ground	72.00	3.2
Cost of ginger for planting	640.00	28.4
Cost of cutting ginger into pieces	100.00	4.4
Cost of planting and applying manure	46.00	2.1
Cost of Manure	103.00	4.6
Maintenance, including harvesting charges	1110.00]	49.4
Land tax per acre	2.00]	
Cost of drying green ginger	72.00	3.2
Supervision charges	105.00	4.7
Total	2250.00	100.0

Average yield—1200 kgs. per acre.
Unit cost—Rs. 1.87 per kg.

TABLE III
COST OF PRODUCTION OF TURMERIC IN INDIA

(Cost per acre)

Item	Cost (Rs.)	Percentage
Ploughing charges	100.00	5.04
Cost of Manure and labour charges	500.00	25.19
Labour charges for raising sand bed	50.00	2.52
Planting charges	50.00	2.52
Cost of Seeds	500.00	25.19
Weeding (labour charges)	100.00	5.04
Cost of fertilizer	150.00	7.56
Insecticides	35.00	1.76
Irrigation	200.00	10.08
Picking (labour charges)	200.00	10.08
Boiling, Drying and Polishing (including firewood)	100.00	5.04
Total	1985.00	100.00

*Excludes overhead charges and land tax and other taxes.

Average yield—2000 kgs. per acre

Unit cost—Re. 1.00 per kg.

TABLE IV
COST OF PRODUCTION OF CHILLIES IN INDIA

(Cost per acre)

Item	Cost (Rs.)	Percentage
Preparatory cultivation	50.00	10.0
Cost of Manure	150.00	30.0
Cost of seed material	40.00	8.0
Sowing, planting, weeding, hoeing etc.	85.00	17.0
Plant protection	115.00	23.0
Harvesting	60.00	12.0
Total	500.00	100.0

Average yield—400 kgs. per acre.

Unit cost—Rs. 1.25 per kg.

Note: The cost is worked out here upto the stage of harvesting. Drying costs are not included. The land tax and interest on capital are also not included in computing the cost.

TABLE SHOWING THE SEED BORNE DISEASE OF CERTAIN SPICES WHICH CAN BE CONTROLLED BY SEED DISINFECTION OF INFESTATION AND THEIR DISTRIBUTION IN INDIA

Crop	Common name of causal organism	Distribution	Economic Status	Control Measures
Chillies	*Anthracnose <i>Colletotrichum capsici</i>	All over India	Moderate to severe in Andhra Pradesh, Bihar, Madhya Pradesh and Madras State	Seeds are treated with an organo-mercuric compound
Turmeric	@ Rhizome rot <i>Pythium aphanidermatum</i>	Madras	Mild	Seed rhizomes are treated with mercuric chloride (0.1%) before storing as well as before planting
Ginger	@ Rhizome rot <i>Pythium spp.</i>	Mysore, Kerala and W. Bengal	Mild	-do-
Cumin	Blight <i>Alternaria burnshii</i>	Maharashtra and Rajasthan	Mild	Seeds are treated with an organo-mercuric compound

2.15 The solutions for these major impediments to new investment are to be found predominantly in applications of research and in an organisation capable of spreading knowledge and stimulating production in areas where profitable opportunities exist. Particular attention needs to be paid to eradication of plant diseases. Some of these diseases are seed borne: for example the table above shows by geographical areas the seed borne diseases of certain spices which can be controlled by seed disinfection of infestation. In providing the wherewithal for such disinfection lies a great investment opportunity both for private capital and talent, as also for public investment. In appropriate deployment of the available know-how in this direction as also the materials so provided lie an area of large return for every unit of expenditure incurred.

2.16 Investment opportunities also exist in the annual crops: ginger, turmeric, and chillies. In the case of ginger, the home market seems to have accepted the new variety of Rio, more fibrous but cheaper to the consumer and apparently more profitable to the cultivator outside Kerala as also perhaps in Kerala itself. A major productive effort for Rio ginger is, therefore, involved in a new export target of 9000 tonnes by 1971. Also effort has to be made to produce a variety of ginger, as good as the highly reputed Jamaican, on a commercial scale. Areas in Assam appear to lend themselves to improved types. The requisite research and development expenditure must be incurred. And if in fact India succeeds in producing varieties of ginger that are equal to the Jamaican ginger in quality, colour, fibre and flavour, we may get entry into the hitherto reserved market of the U.S.A. and Canada.

2.17 In the case of turmeric also substantial scope for increased production exists, particularly if the current production at about 110000 tonnes is viewed in the context of the peak production of 165000 tonnes reached in 1956-57. The overall production of turmeric can most certainly be increased if the findings of recent

research devoted to increasing yield per unit of land are passed on to the turmeric growers in a systematic manner. In this context particular mention needs to be made of the research work done at the Turmeric Research Station at Pedapalem, (Andhra Pradesh) where an important selection of Duggirala type turmeric has been identified with an increased yield of 10 per cent. It is also tolerant to "leaf spot" when isolated.

2.18 Apart from this overall increase in the production of turmeric particular attention needs to be paid to increase the production of Alleppey Turmeric. All the Alleppey Turmeric produced in India is exported to the U.S.A. but because of the reduced crop in 1967, the volume of exports was almost halved in 1967 as compared to 1966. Coordinated efforts, therefore, need to be made to increase the output of Alleppey Turmeric which has a ready market in the United States and is equally acceptable in Europe.

2.19 In chillies the investment opportunities exist, not so much in the form of increasing production, as in the form of identifying and isolating the most desired varieties. It will need both investment and human ingenuity to provide chillies upto the standards required in the foreign markets. For the U.S. market, chillies will have to pass the Scoville test for heat content. In other markets too, chillies have to keep up to the standards of requisite cleanliness and colour (deep red is generally preferred) and should be without stems and caps and unblemished and free from mould.

2.20 Apart from exporting whole chillies, the production of appropriate varieties of which may require greater (vertical or horizontal) integration between producers and exporters of chillies, the market exists for processed chillies in the form of chilli powder or chilli sauce. In the case of processed chillies however, there is a danger of infestation, a danger which can be suitably met by research and better quality control. These are some of the problems towards the solution of which the spice test laboratories, recommended elsewhere in this report, have to pay attention, apart from eradication of diseases, seed-borne or otherwise.

III. The Character of Competition

The Challenge of Competition

3.1 One major observation which emerges from the study of India's share of markets abroad is to the effect that in each major spice although there are a number of producers and a very large number of consumers, India's foreign markets are really limited by only one major competitor in each case. In the case of Black Pepper, this is Lampung (Indonesia); in the case of Cardamom, this is Guatemala; for ginger it is Sierra Leone; for turmeric, it is Pakistan and for Chilli, it is Japan. This points both to a limitation of the area of study and of the objectives of export strategy. It is broadly true that if we could deal successfully with the competition of one country's produce in each case in one or two major markets where that country's produce threatens our market, the viability of the targets proposed could be ensured. In the case of Pepper, the market threatened is the United States; in the case of Cardamom, it is Bahrain and Sweden; in the case of turmeric, it is Ceylon and Japan; in the case of chillies, it is Ceylon and the United States. The instruments of both offence and defence are two only: one, quality standards of the importing country, and two, a price war with our leading competitor.

The Problem of Quality

3.2 The problem of quality in the case of each spice is dealt with in the detailed report on each spice. Happily, in the two leaders—pepper and cardamom—Indian qualities are recognized as being the highest in the field. The competition against Malabar Extra Bold Pepper and Alleppey Green Cardamom is, therefore, negligible. But in both cases India does not have enough to meet foreign demand even at the high price prevailing. In the case of grades not accepted as top varieties, India faces competition on price for which strategies suited to each case must be devised. The price differential has, therefore, been worked out in the case of the important competitor in the important market delineated. If we could develop a strategic price policy to give battle in selected markets we could succeed without a uniform reduction in prices. Curiously, this fairly obvious concentration of effort on one or two major points of attack instead of dilution of effort over the field has been largely the exception and not the rule. There is need for integration of strategic price cutting efforts so that India does not lose by unnecessary rivalry inside the trade. It is hoped this report will provide the framework of such integrated strategic price planning at least for our major spices.

3.3 The strategic market selected for attack must be given high priority both on quality and on price reduction. The partial failure of our effort in Sweden on cardamom is the result—as we discovered in Bombay—of a reduction in quality in order to match Guatemala's cardamom price. The consumer is no better off if he gets a poorer article for the lower price. And we earn no additional foreign exchange because Guatemala's increased exports will probably lead to a further price reduction in another strong market. The strategy should be to drive them into minor markets so that we capture all our strategic market shares. Our selling costs are reduced in the process of this economy of effort and production can be more securely planned in the future thus making possible a fall in production costs over the long haul.

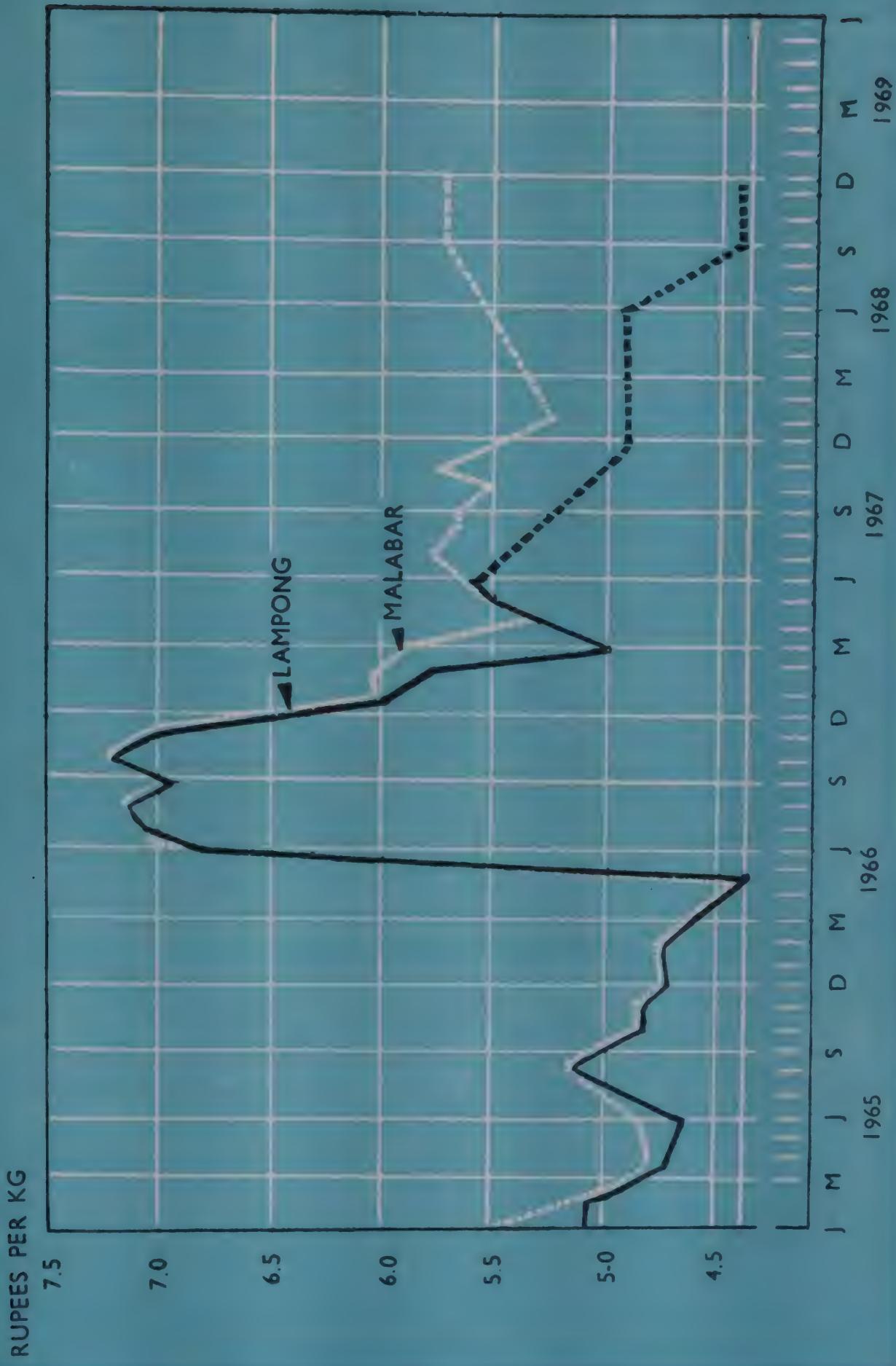
The Changing Markets

Apart from the total volume of exports stipulated for 1971 and 1976 it is necessary to indicate with precision the areas to which these exports will be directed. It will be noticed from the market maps attached, while the total volume of exports in each case corresponds with that achieved in the peak years a substantial change in direction of India's trade is envisaged. Thus in the case of pepper, although a major attempt to recover a good share of the U.S. market is proposed, India's major market is the U.S.S.R. and Eastern Europe, although our anxiety to secure convertible currencies should incline us differently. It is recognised that with the recovery of Indonesian production and the greater competitive capacity of Lampung in the U.S. market, too great a price can easily be paid to recover our former high share of that market. The United States remains, however, a strategic market for Indian black pepper. It does, however, underline the point that, even in a strategic market specially selected as an objective for a new export effort, there is no reason to pursue that effort to a point which injures our net earnings measured globally. There must not be an element of withdrawal from a promising future market, in this case Eastern Europe. Except for Italy, however, Western Europe is an area of only stationary interest. Thus only the U.S.A. and Italy represent our strategic points of aggressive sales for black pepper. Similar changes in the trade pattern have occurred, though of a less drastic significance, in the case of other spices also.

STRATEGIC MARKETS FOR MAJOR SPICES AND STRATEGIC COMPETITORS

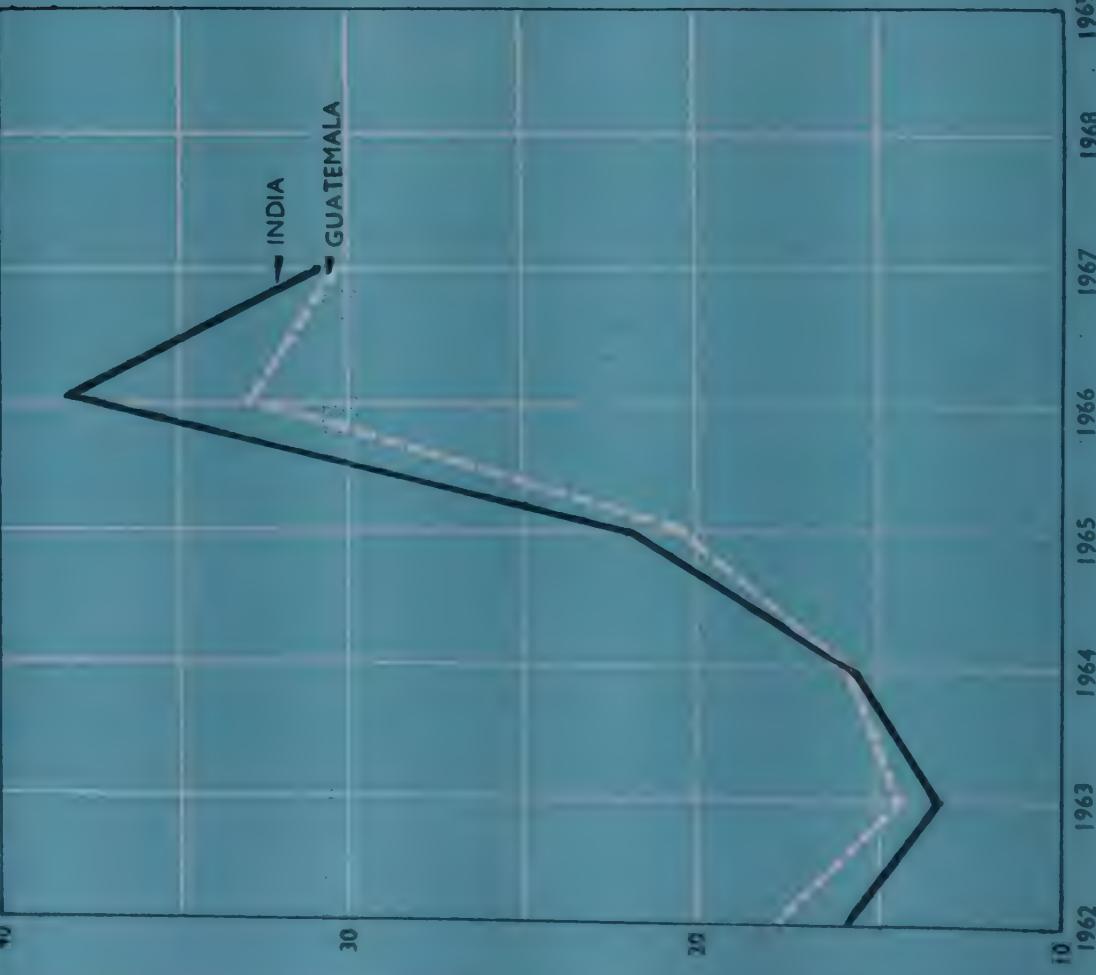
<i>Spice</i>	<i>Strategic Markets</i>	<i>Strategic Competitors</i>
Pepper	U.S.A. Italy	Indonesia
Cardamom	Bahrain Sweden	Guatemala
Ginger	Canada U.S.A.	Sierra Leone
Turmeric	Ceylon Japan	Pakistan
Chillies	Ceylon U.S.A.	Japan

PEPPER : SPOT PRICES AT NEW YORK : 1965-1968



**CARDAMOM : UNIT VALUE OF IMPORTS FROM INDIA
AND GUATEMALA BY SWEDEN**

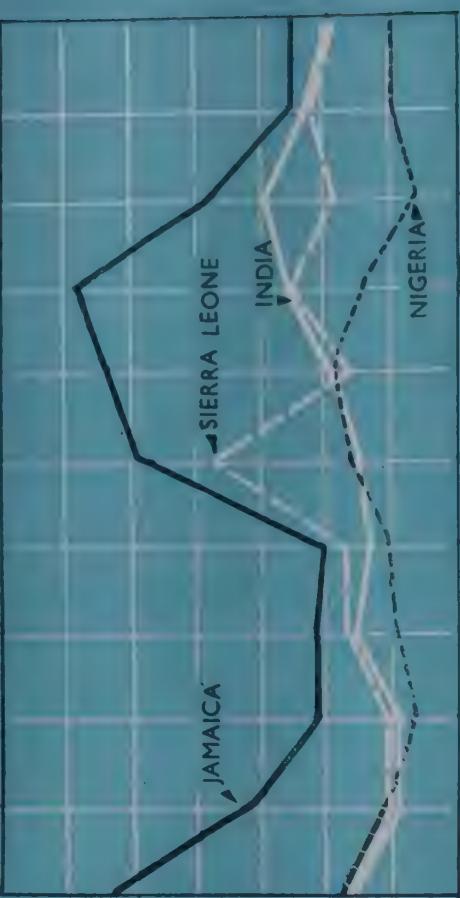
THOUSAND KRONERS PER TON



GINGER : C.I.F. PRICES : 1957-1967

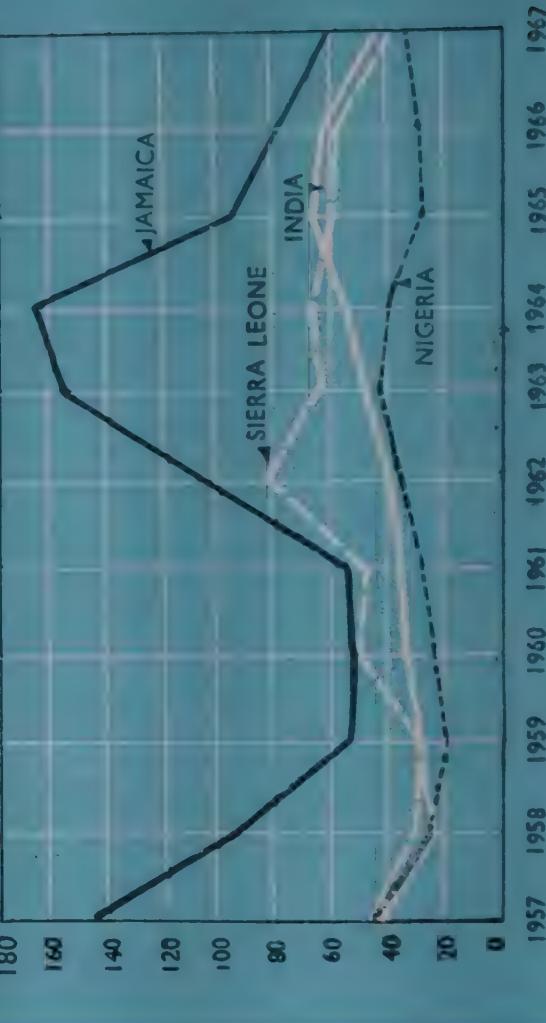
U. K. MARKET

POUNDS PER K. G.



U. S. MARKET

CENTS PER K. G.



IV. Export Strategies: 1969-1976

I. An Export Strategy for Pepper: 1971 and 1976

4.1 Pepper, partly because it is much the largest world spice and contributes over two fifths of India's foreign exchange earnings from spices, occupies a place of pride in this narrative. In a commodity traded practically all over the world, one might assume that major pulls appear globally all the time. This is not the case. The picture for black pepper in which India currently deals is dominated by two great buyers only, the United States and the Soviet Union. Two great sellers—India and Indonesia—dominate the producing countries. Both prices and policy are, therefore, dictated by the big four—two major producers and two major consumers.

4.2 In 1967, because of India's bilateral arrangements in the rupee account with the USSR and Eastern Europe one entire market of 13800 tonnes purchased by the USSR and the East European countries was excluded from Indonesian competition. By the same token, because the whole weight of an Indonesian bumper crop was thrown into the United States, Indian exports dropped from a peak of 10500 in 1954-55 to a mere 1465 tonnes causing a severe loss of convertible foreign exchange. At the same time Indonesian (Lampung) prices have fallen steeply and are now quoting (Nov-April) at 26½ cents per lb. while, buoyed by USSR and other East European purchases, Malabar prices are holding at the equivalent of 37 cents per lb. Although Lampung and Malabar are interchangeable on the New York Produce Exchange Futures Pepper contract, a differential of a third of the Indian price threatens to exclude India from the USA just as Indonesia, because of the currency barrier, is excluded from the Soviet Union.

4.3 A detailed analysis of the deleterious effects of the current price confrontation between India and Indonesia is not necessary here. It is in the interest of neither to be ruled by a single great buyer; it is in the interest of neither to endure a ruinous free market price at which both developing countries are being seriously denied convertible currencies by advanced nations. It would appear that the lines of an official agreement between the two countries to stabilise prices already exist: it is however the effectiveness of enforcement rather than the spirit of the agreement which is the crucial condition of success.

4.4 Markets exist currently for a world trade estimated in 1967 at 75000 tonnes, with producing countries retaining about 20000 tonnes for their own consumption. It is likely that something between 5000 and 10000 tonnes is excess being offered either spot or forward and this surplus accounts for the difference between a stable price of 37 or 40 cents per lb. c.i.f. New York and the current price for Lampung of 26 cents per lb. Apart from an agreement which would be welcome in any case, it is obvious both India and Indonesia must hold buffer stocks so that their combined offerings do not at any time weigh too heavily on the U.S. market.

4.5 It is suggested that India should commence to hold buffer stocks of pepper (not necessarily exclusively Indian pepper) of the order of 5000 tonnes and that by 1975-76 it may be advisable to increase the quantity to 7500 tonnes depending on world supply and demand. Appropriate proportions of this buffer stock could

be ASTA and FAQ qualities. These buffer stocks, being intended for export, should be held at the ports of export, not near producing centres where they are likely to deter new cultivation.

4.6 India is currently meeting a declining share of world trade in pepper. In 1954 we supplied nearly half the pepper in world trade. In 1965, our peak year by volume, we supplied a little over a third. If world consumption should rise as expected to 110,000 tonnes by 1971 and world trade to 85,000 tonnes, export of 30,000 tonnes from India would hold a little over a third of world trade in that year.

4.7 A minimum export performance of 30,000 tonnes is suggested for 1971; the corresponding figure for 1976 proposed is 36,000 tonnes. Domestic consumption in 1971 will probably not be less than 12,000 tonnes; it may be higher at 14,000 tonnes by 1976. This suggests that production targets should not be less than 40,000 tonnes in 1971 and 50,000 tonnes in 1976.

4.8 If estimates of 32,000 tonnes for the crop of 1967 are accepted, a programme for production for 1971 implies an addition of about 10,000 tonnes in four years. This cannot be achieved except by a determined effort to raise productivity in areas where inputs of fertilizer, sprinkler irrigation and improved varieties can make a rapid advance.

4.9 Even allowing for some success with the new but still unproved strain of Panniyur 1, an assured crop of 40,000 tonnes by 1971 will probably not be obtained except by effective treatment of plant diseases such as wilt and by a much more co-ordinated replanting programme.

4.10 The strategies for recovery of the United States market and for an expansion of exports at the levels proposed imply an emphasis on quality, cleanliness and performance according to standards which have not yet arrived over the whole trade.

4.11 India should not dissipate her energies by entering the white pepper trade. We have currently not an acceptable product: there is no economic advantage and this would bring us into conflict with Indonesia with whom an agreement on black pepper seems imperative.

WORLD BALANCE SHEET OF PRODUCTION & CONSUMPTION FOR PEPPER: 1965
(India's Peak Year of Exports for Pepper)

	(in '000 tonnes)						
	Importers				Estimated consumption in the producing countries	Total Production (5+6)	
	U.S.A. & Canada	Europe	USSR & East Europe	Other countries			
	1	2	3	4	5	6	7
India*	7.1	2.6	12.9	3.7	26.3	9.0	35.3
Indonesia	10.0	3.0	—	—	13.0	2.0	15.0
Sarawak, Malaya & Singapore	2.0	5.0	—	11.0	18.0		
Brazil	3.0	2.0	—	3.0	8.0		
Malagasy Republic	—	1.0	—	1.0	2.0		
Cambodia	—	2.0	—	—	2.0		
Ceylon	—	—	—	1.0	1.0		
Total	22.1	15.6	12.9	19.7	70.3	20.0	90

* India's figures refer to the financial year 1965-66.

WORLD BALANCE SHEET OF PRODUCTION & CONSUMPTION FOR PEPPER: 1967

(in '000 tonnes)

Producers	Importers					Estimated consumption in the producing countries	Total production (5+6)
	U.S.A. & Canada	Europe	USSR & East Europe	Other countries	Total		
	1	2	3	4	5	6	7
India	2.4	2.1	13.8	2.6	20.9	9.0	29.9
Indonesia	20.0	5.0	—	—	25.0	2.0	27.0
Sarawak, Malaya & Singapore	2.0	5.0	—	10.0	17.0		
Brazil	3.5	2.0	—	3.0	8.5		
Malagasy Republic, Cambodia and Ceylon	1.0	2.0	—	2.0	5.0	1.8	38.5
Total	28.9	16.1	13.8	17.6	76.4	19.0	95.4

Note: Figures for India relate to the calendar year 1967

For other countries the figures have been estimated on the basis of the available data.

WORLD BALANCE SHEET OF PRODUCTION & CONSUMPTION FOR PEPPER: 1971

(in '000 tonnes)

Producers	Importers					Estimated consumption in the producing countries	Total production (5+6)
	U.S.A. & Canada	Europe	USSR & East Europe	Other Countries	Total		
	1	2	3	4	5	6	7
India	6	4	16	4	30	10	40
Indonesia	14	4	4	2	24	3	27
Malaya & Singapore	2	5	—	8	15		
Brazil	3	2	—	5	10		
Malagasy Republic	—	1	—	1	2	12	42
Cambodia	—	2	—	—	2		
Ceylon	—	—	—	1	1		
Total	25	18	20	21	84	25	109

WORLD BALANCE SHEET OF PRODUCTION & CONSUMPTION FOR PEPPER: 1976

(in '000 tonnes)

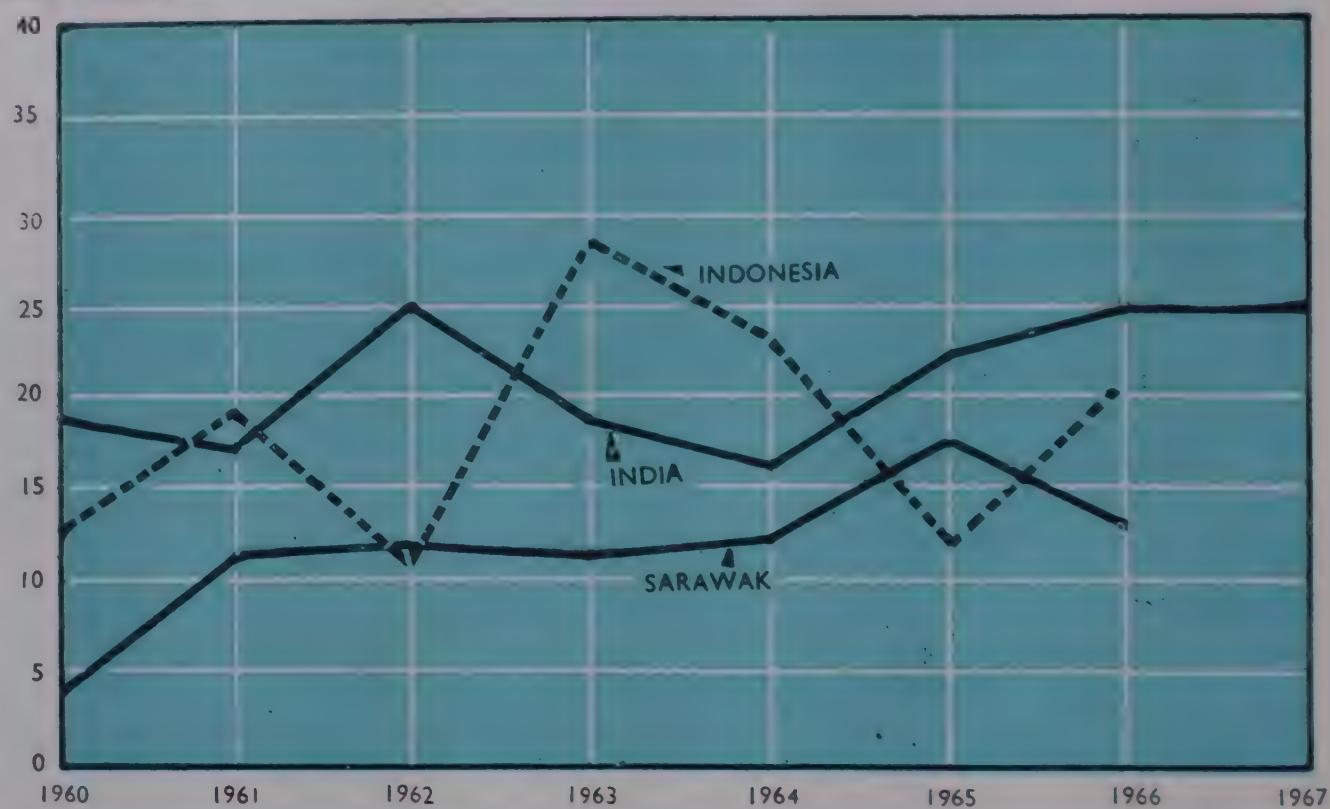
Producers	Importers					Estimated consumption in the producing countries	Total Production (5+6)
	U.S.A. & Canada	Europe	USSR & East Europe	Other Countries	Total		
	1	2	3	4	5	6	7
India	10	5	16	5	36	14	50
Indonesia	12	6	6	5	29	3	36*
Sarawak, Malaya & Singapore	2	5	—	11	18		
Brazil	3	3	—	6	12		
Malagasy Republic	—	2	—	1	3	13	49
Cambodia	—	2	—	—	2		
Ceylon	—	—	—	1	1		
Total	27	23	22	29	101	30	135*

* Difference between production and consumption will constitute buffer stock.

TRADE IN PEPPER 1960-67

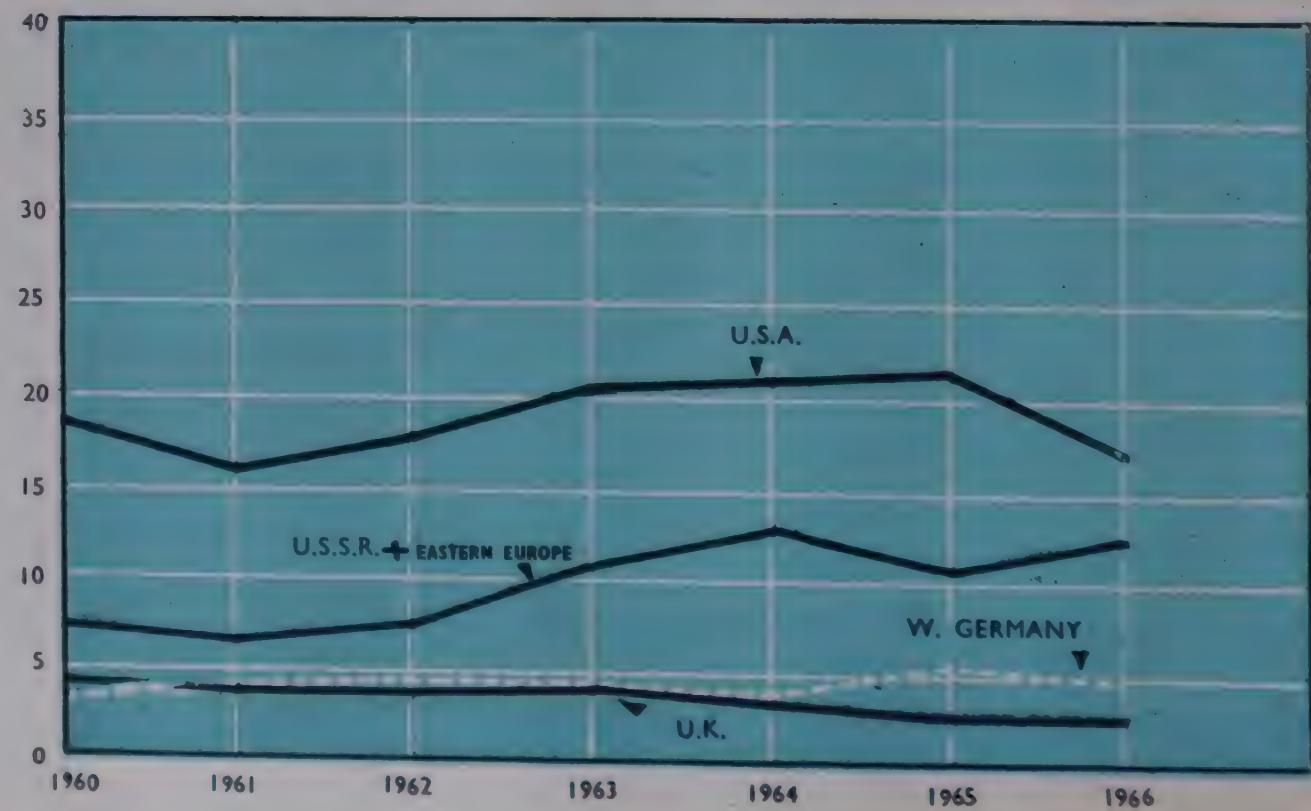
WORLD'S MAJOR EXPORTING COUNTRIES

THOUSAND TONNES

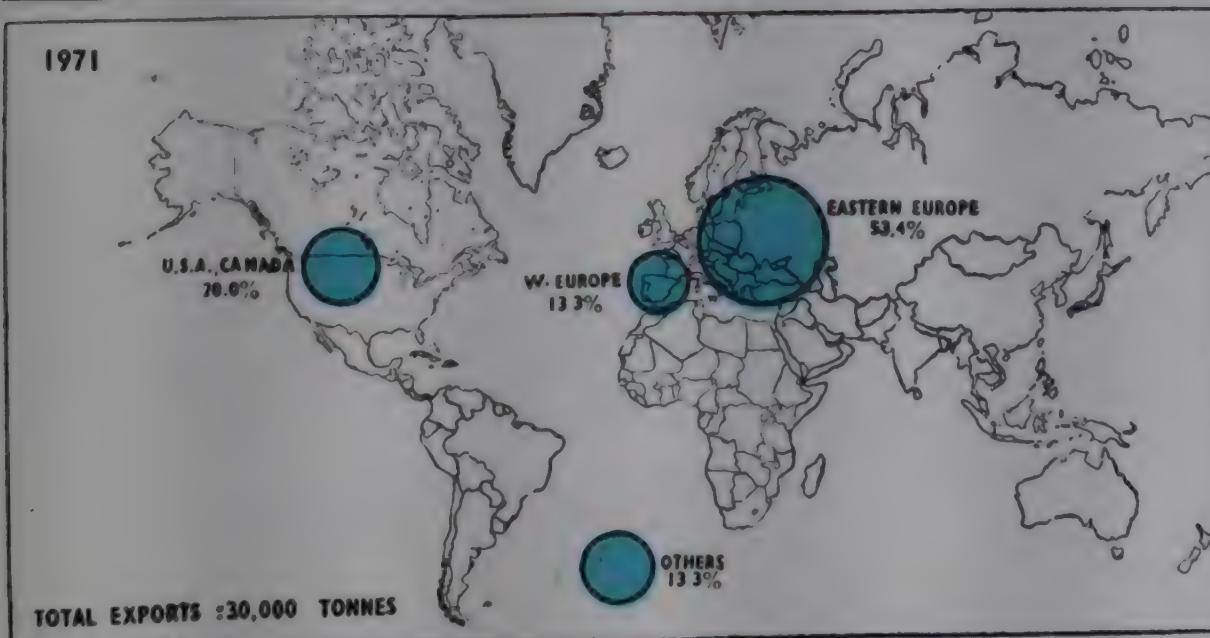
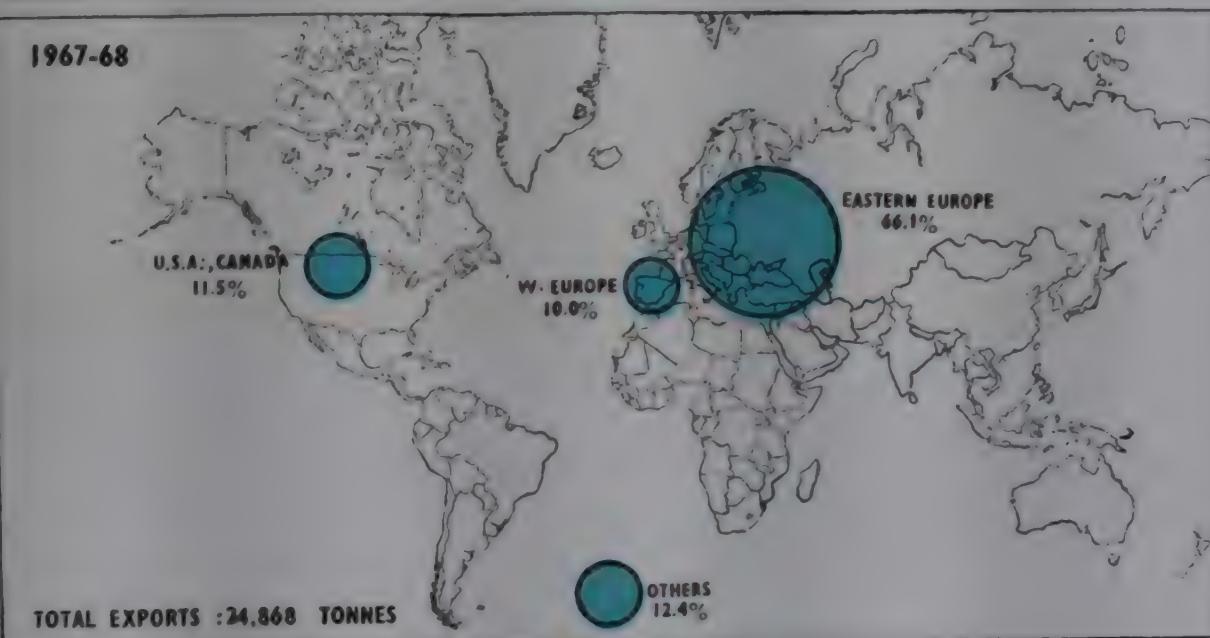
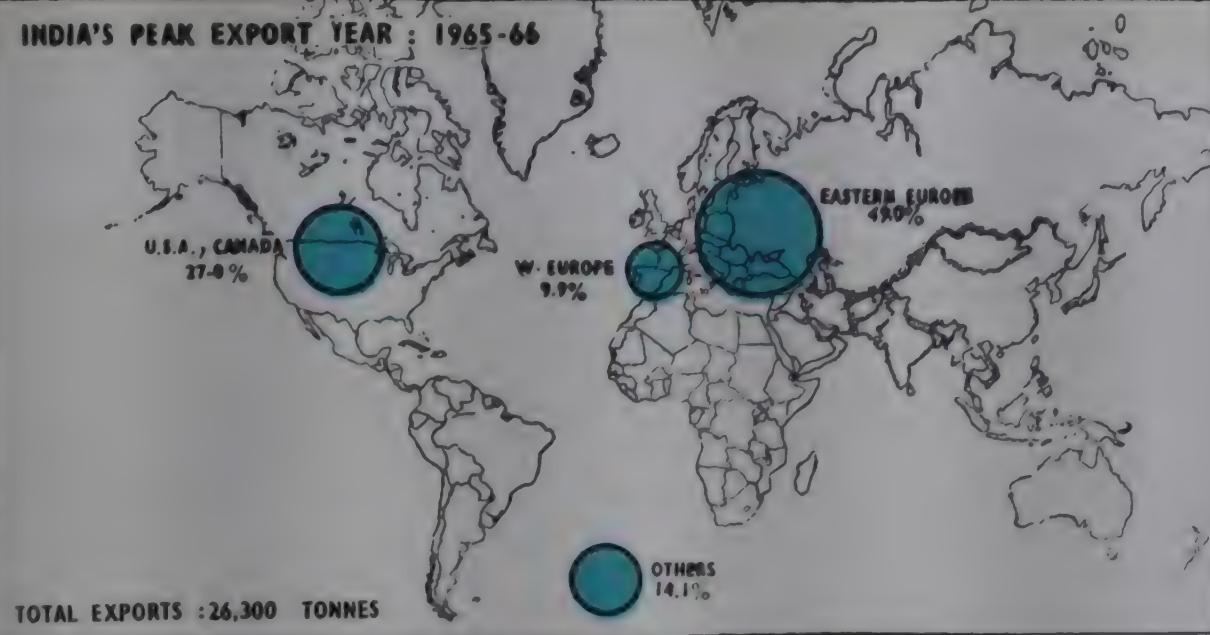


WORLD'S MAJOR IMPORTING COUNTRIES

THOUSAND TONNES



PEPPER



Eastern Europe includes U. S. S. R.

II. Cardamom: A Policy for 1971 and 1976

4.12 Cardamom, alone of all our spices, is currently running at or near a peak in foreign exchange earnings. The decline from the peak of volume of export of 2310 tonnes in 1963-64 has been steep. The volume figure was only 1724 tonnes in 1966-67 and probably only 1530 tonnes in 1967-68 but rises in unit prices have much more than offset the drop in volume. Unit values which were as low as 2600 dollars per tonne in 1962 rose to 7100 dollars per tonne average in 1966 and have fluctuated round this figure since with no sign of weakness in spite of prophets of gloom. The supply and demand position justifies a major incursion into new investment in cardamom cultivation.

4.13 Beneath the cheerful statistics on foreign exchange earnings in 1966-67 and 1967-68 lies concealed a major weakness. Cardamom is dominated and, if seriously neglected, it could be overwhelmed by a single liability —katte, a plant disease which in the last three years has exacted a heavy toll of our production and is currently uncontrolled. It is now evident, after many years of relatively infructuous research, that there is no certain, or even probable, cure for katte disease. Plants and all roots infected must be destroyed and whole areas infected must be given up and new areas planted. This points to a major new challenge and a great commercial opportunity.

4.14 There is currently a world demand of about 3500 tonnes outside the four producing countries—India, Guatemala, Ceylon and Thailand, slightly above the actual peak of 3100 tonnes in 1962. Roughly, a third of this demand was unsatisfied in 1967 when total world exports (and imports) are estimated at 2280 tonnes. In other words, there is a current gap of possibly 1200 tonnes which new offerings can fill. By 1971, the gap could widen to 1500 tonnes, by 1976 to 2000 tonnes.

4.15 It is logical to suppose that India which still has more than two-thirds of world trade, and which in 1961 had four-fifths, will strive to retain not less than two-thirds of the available demand, even though in the process it cannot help reducing the unit value of prices which reflect a scarcity of supply never previously experienced, notwithstanding the remarkable headway Guatemala has made in the last four years. The target for exports proposed is 2300 tonnes in 1971, and 2650 tonnes in 1976. The assumed average unit value is Rs. 42000 per tonne against Rs. 47266 in 1966-67. A higher value can be obtained for cardamom small seeds, the unit value per tonne of which in 1966-67 was Rs. 65241. Thus, export earnings can be targetted at about Rs. 10 crores in 1971 and at about Rs. 12 crores in 1976.

4.16 The major effort must be directed at production with our scientists providing both leadership and direction in the improvement of productivity and the elimination of katte and, to a lesser degree, chirke and thrip. This cannot be accomplished if the responsibility for elimination of the disease is divided or areas of new cultivation are chosen without the requisite technical examination. An obvious reform would be to place the responsibility wholly on scientists of the Cardamom Board and to provide them with both the authority and the research funds necessary for the purpose. The current allotment of Rs. 8 lakhs from the cess is wholly inadequate: a larger cess would be justified to be wholly expended on the recovery and rehabilitation programme.

4.17 It is estimated that about 500 tonnes of "new" cardamom will be required in 1972-73. About 7000 hectares of land will thus have to be assigned with a yield of about 75 kg. per hectare.

4.18 While the market is assured currently, there should be no complacency in regard to the character of the competition India faces. Ceylon and Thailand

together will probably not, in the period considered, produce for export much more than 300 tonnes but Guatemala which has made heavy inroads into our U.S. and West European markets (particularly Sweden) could conceivably reach a thousand tonnes, though this is now reckoned unlikely. The Guatemala plant is also believed to be susceptible to plant diseases which appear particularly as plants age, that is, between the tenth and the fifteenth year.

4.19 In the last analysis, it is India's firm hold on the Middle East markets particularly for cardamom coffee which must be made to endure. "Cardamom Coffee" will continue to provide a stable demand in Kuwait, Saudi Arabia and the Sheikdoms, notwithstanding the attraction of other beverages, because increased affluence enables the market for those drinks to grow while not impinging heavily on volume of either coffee or cardamom. Per capita consumption as recently computed for 1963-66 stays in the Middle East at 72 grams per head per year against a peak of 90 grams in 1961-63. The figure has been fairly stable for over a decade which does not warrant the assertion that the cardamom coffee habit is disappearing.

4.20 With an assured market of not less than 1000 tonnes more than we are currently producing, high profitability and a firm will to deal with kattle under an invigorated Cardamom Board, the figures indicated should be easily attained. Certainly, Indian traders must not be lulled into complacency by high unit realisations. There must be a major effort to regain markets in Western Europe lost to Guatemala. The United States, except for Alleppey Green because of its intrinsic merits, will probably present greater difficulties.

**THE PATTERN OF CARDAMOM PRODUCTION
AND CONSUMPTION IN INDIA'S PEAK
YEAR-1963**

(in Tonnes)

Producers	Importers				Estimated consumption in producer countries	Total Production
	Saudi Arabia	Kuwait	Other Middle East	Other countries		
India	542	323	173	1088	1974	4100
Guatemala	91	—	—	282	—	373
Ceylon	51	6	13	85	1345	1500
TOTAL	684	329	186	1455	3319	5973

Note: Data presented is for the calendar year 1963;
India's peak year of exports was 1963-64 as per financial year data.

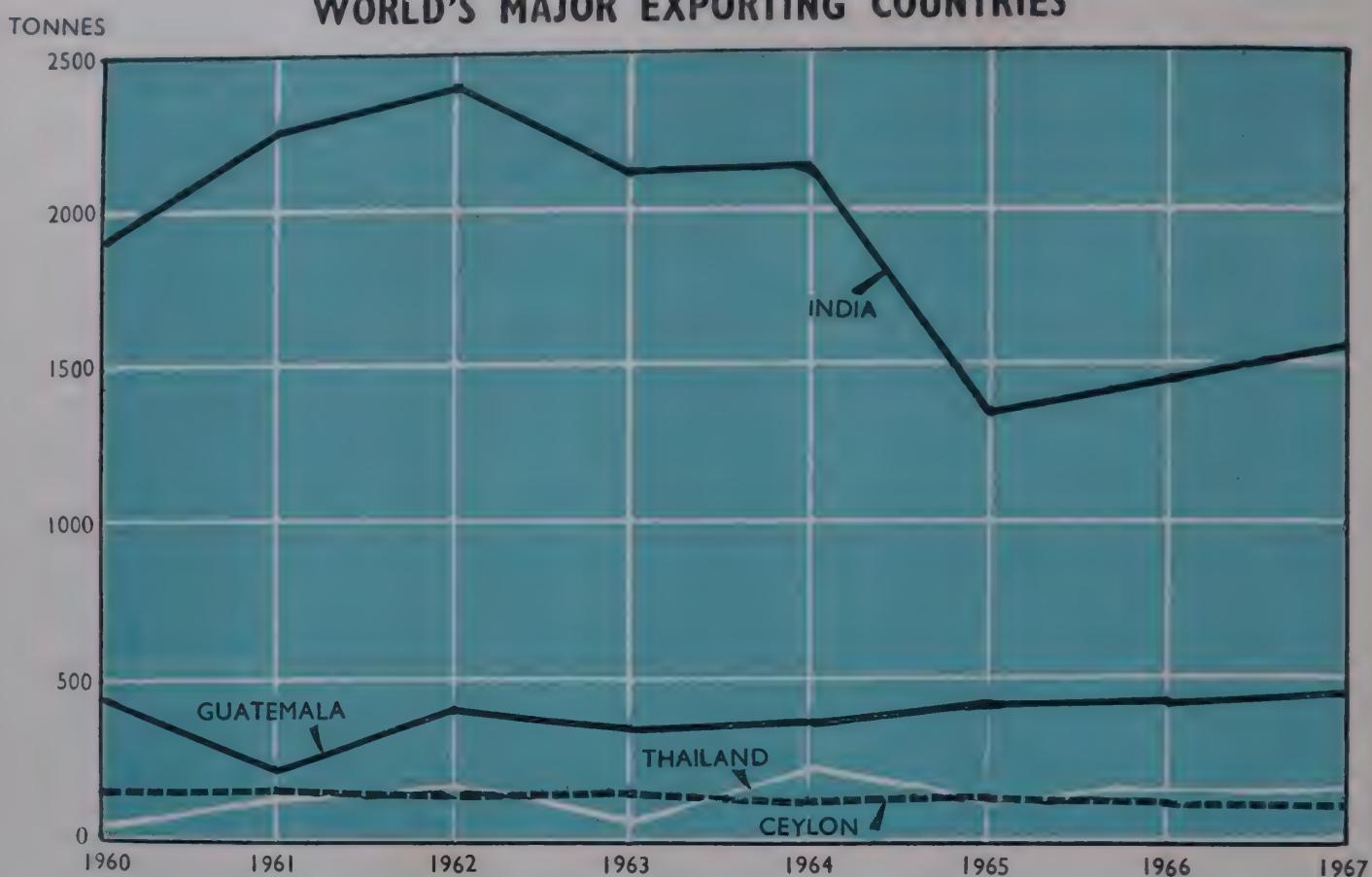
**POSSIBLE PATTERN OF CARDAMOM PRODUCTION
AND CONSUMPTION : 1971**

(in Tonnes)

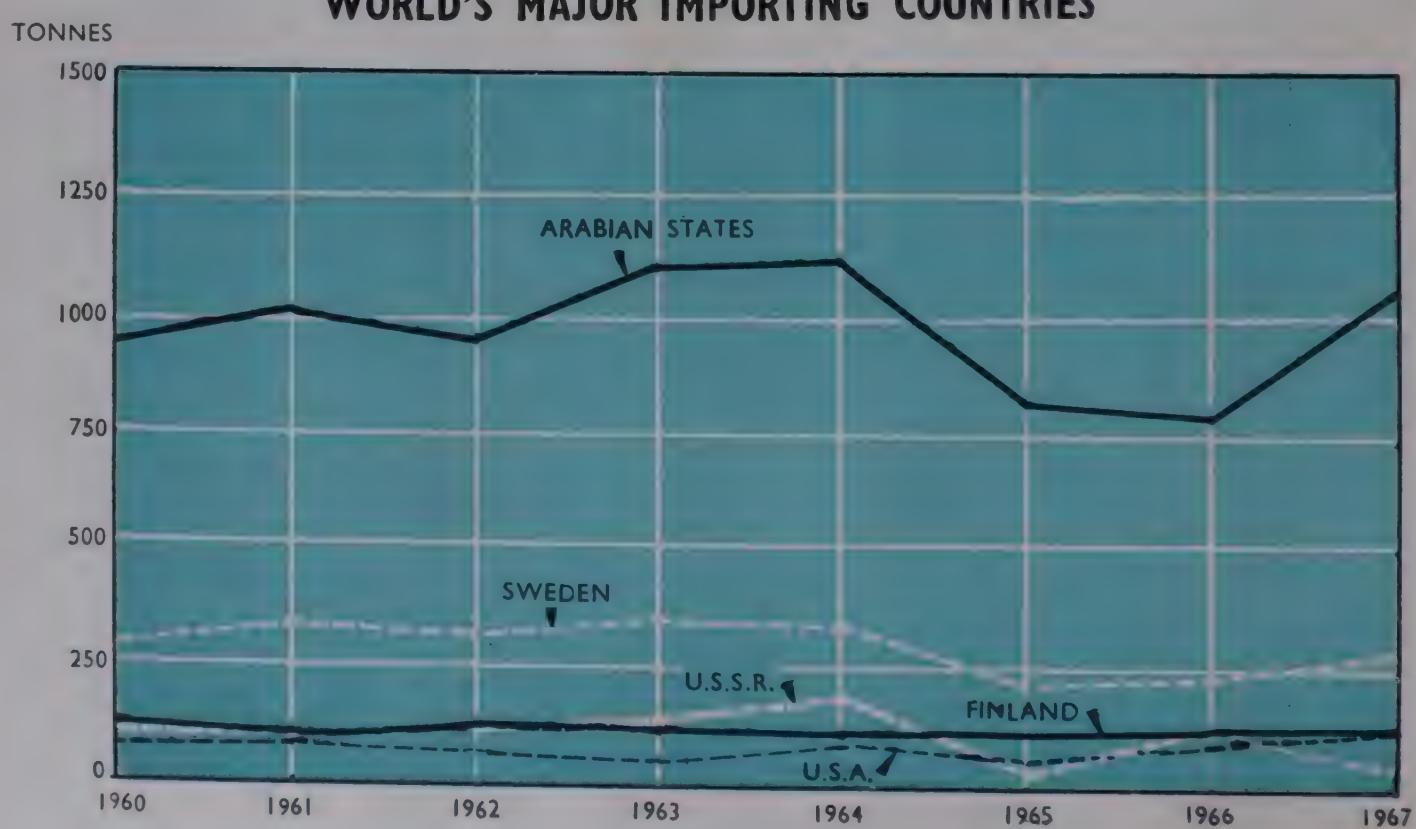
Producers	Importers				Estimated consumption	Total Production
	Saudi Arabia	Kuwait	Other Middle East	Other Countries		
India	650	450	150	1050	704	3000
Guatemala	100	—	50	300	—	450
Ceylon	50	10	20	120	1550 ?	1750?
TOTAL	800	460	220	1470	2250	5200

TRADE IN CARDAMOM
1960-1967

WORLD'S MAJOR EXPORTING COUNTRIES



WORLD'S MAJOR IMPORTING COUNTRIES



CARDAMOM

INDIA'S PEAK EXPORT YEAR : 1963-64

TOTAL EXPORTS : 2,310 TONNES

SWEDEN
7.5%

EASTERN EUROPE
8.3%

PAKISTAN
12.5%

MIDDLE EAST
48.7%

OTHERS
23.0%

1966-67

TOTAL EXPORTS : 1,724 TONNES

SWEDEN
6.8%

EASTERN EUROPE
8.0%

MIDDLE EAST
52.0%

OTHERS
33.2%

1970-71

MAIN COMPETITORS

GUATEMALA
CEYLON

TOTAL EXPORTS : 2,300 TONNES

SWEDEN
8.7%

EASTERN EUROPE
8.7%

MIDDLE EAST
54.3%

OTHERS
28.3%

III. A Strategy for Ginger : 1971 and 1976

4.21 India was, and still remains, the world's largest producer and exporter of ginger. But the year 1957, India's annus mirabilis, for our exports has never been approached again. In the first three months of 1957 nearly 6,000 tonnes of ginger were exported. Nearly 10,000 tonnes were exported in that year from a crop as low as 16,000 tonnes. In 1967, only about 4,500 tonnes were exported.

4.22 To re-establish a peak of 10,000 tonnes, supplies of Cochin ginger must be made available at least to the extent of India's peak year. Unhappily, although ginger production has been higher, Cochin ginger has not been available at a price low enough to compete with Nigeria or Sierra Leone even after allowing for difference in grades.

4.23 A strategy for the capture of lost markets involves, therefore, a segregation of Cochin ginger for export and a reduction of its price. The Indian home market seems to have accepted the new variety of Rio, more fibrous, but cheaper to the consumer and apparently more profitable to the cultivator outside Kerala as well as in Kerala itself. A major productive effort for Rio ginger is involved in a new export target of 9,000 tonnes by 1971. Currently, Cochin ginger selling at above Rs. 4 per kg. in the London market is about 25% above the world price of Sierra Leone which is only slightly inferior but largely acceptable.

4.24 If Rio ginger production increases by 5,000 tonnes by 1971 and an equivalent volume of Cochin ginger released for export, competition amongst Indian sellers could reduce the price by 10% at least, possibly more.

4.25 A cash subsidy of as much as 12½% could re-establish Cochin ginger in the markets in Europe and even the United States where largescale loss has taken place since 1957. The removal of the 50% Kerala Sales Tax and the 0.5% Central cess is also necessary.

4.26 Efforts must continue to produce a variety of ginger, as good as the highly reputed Jamaican, on a commercial scale. Areas in Assam appear to lend themselves to improved types. The requisite research and development expenditure must be incurred.

4.27 The world trade in ginger is estimated to go up from about 12,000 tonnes in 1957 to over 20,000 tonnes by 1976. The continuation of our efforts must result in an export achievement of about 9,000 tonnes by 1971 and over 13,000 tonnes by 1976, provided the export price in strategic markets is reduced by about 23% by 1971 and 26% by 1976 to induce higher consumption.

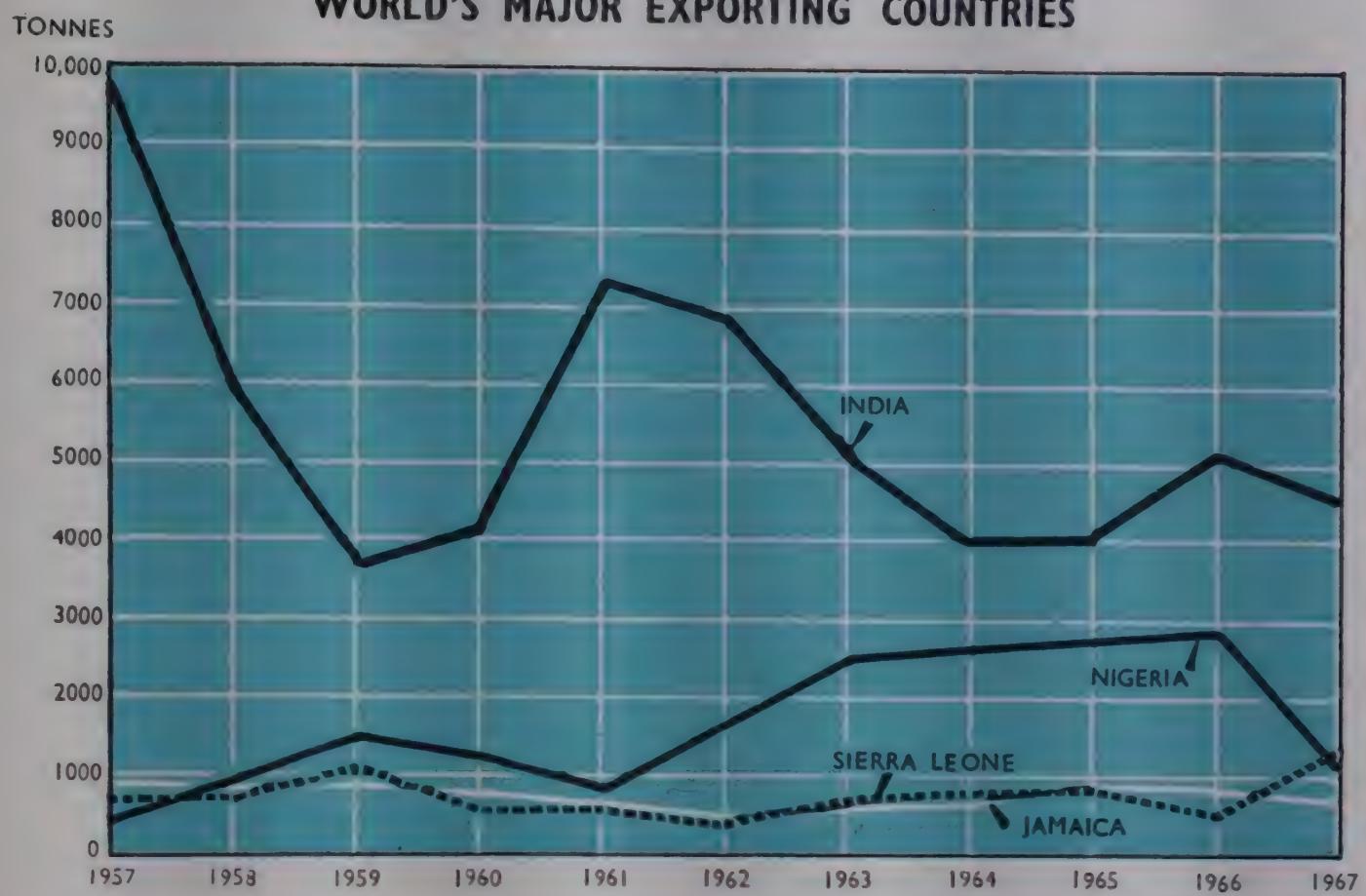
IV. Export Strategy For Turmeric

4.28 India possessed virtually a world monopoly of turmeric in 1956-57. Our production in that year was the highest on record at 163,000 tonnes. Also our exports in that year at 13,158 tonnes were an all-time peak which has not been scaled so far. The major buyers of turmeric from India in that year were Iran, Pakistan, Ceylon, Aden, U.S.A., U.K., Singapore and Japan. These eight markets shared nearly three-fifths of our exports.

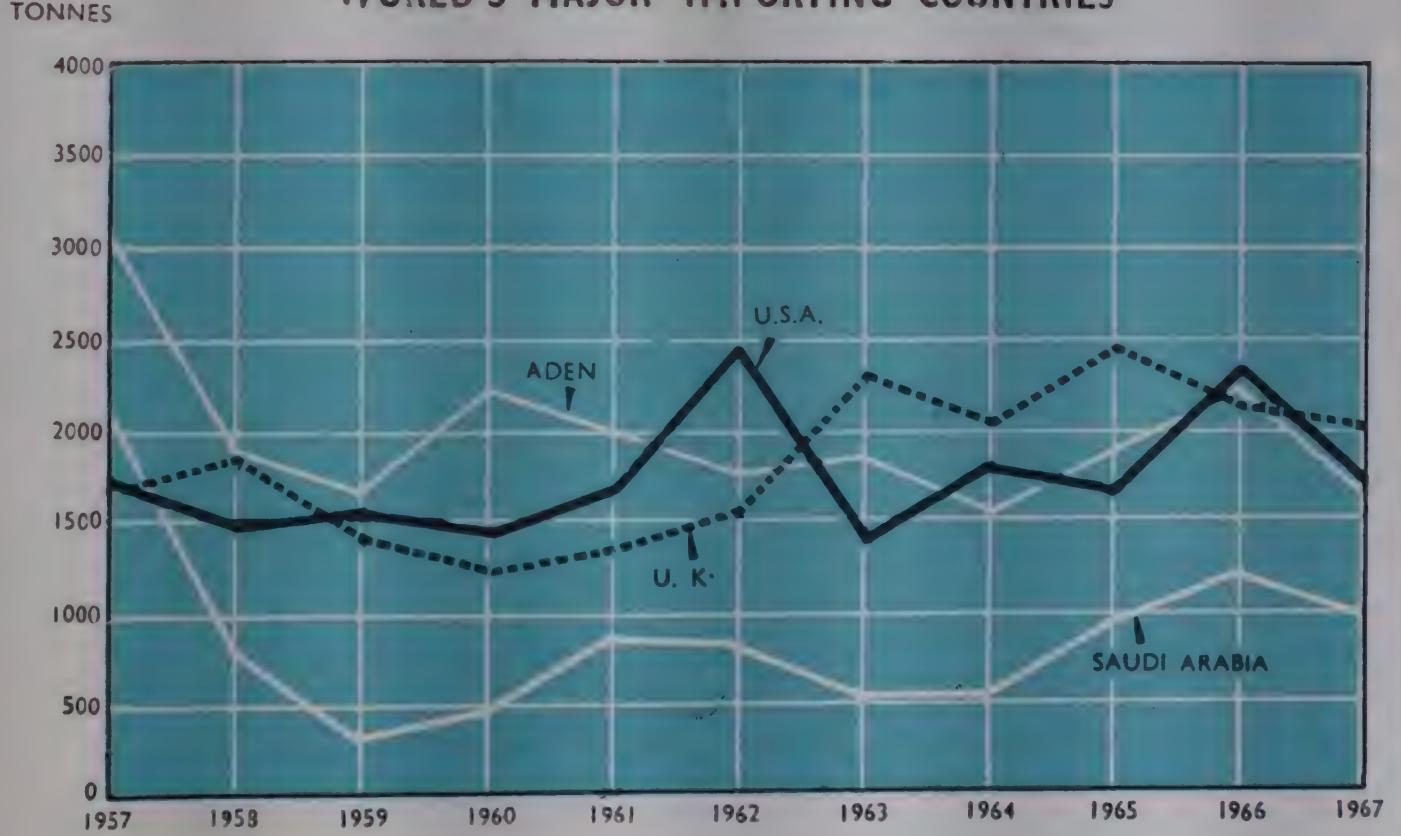
4.29 The Achilles heel of turmeric is production which has been highly erratic. It dropped to as low as 82,000 tonnes in 1961-62, virtually a fifty per cent drop from 1956-57. The same erratic behaviour in exports has been reflected for five years, from 1959-60 to 1963-64. Pakistan, by an irony of history, was our second largest buyer for turmeric in 1956-57, the first position belonging to Iran. However, in 1966-67, Pakistan was our largest competitor in turmeric in the international market.

TRADE IN DRY GINGER 1957-1967

WORLD'S MAJOR EXPORTING COUNTRIES

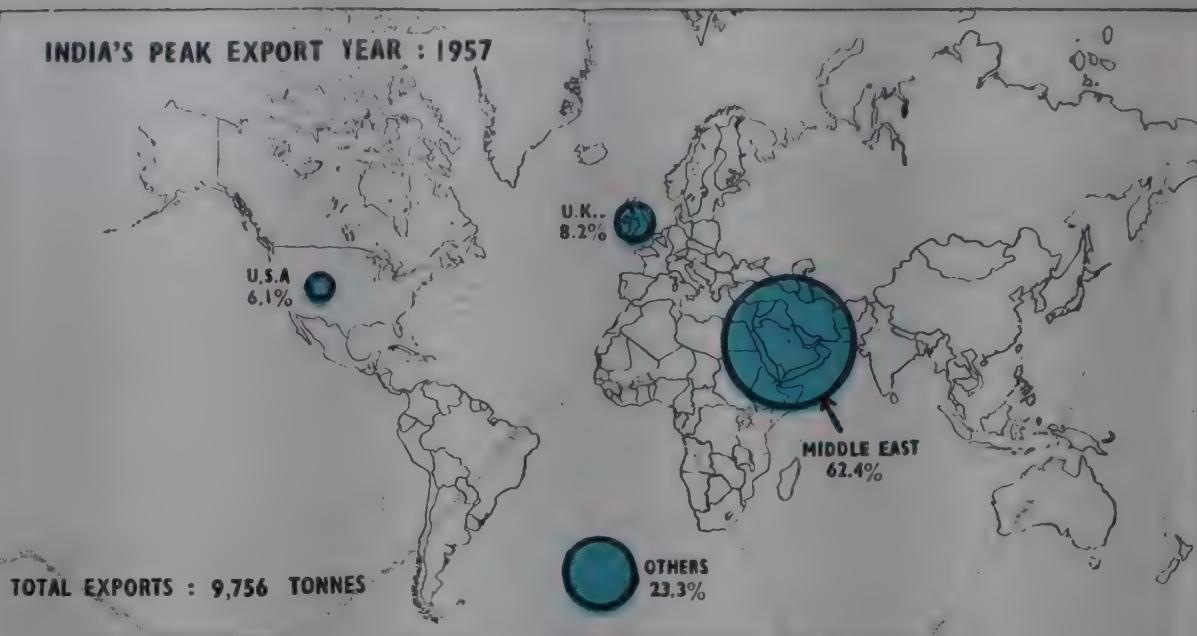


WORLD'S MAJOR IMPORTING COUNTRIES



GINGER

INDIA'S PEAK EXPORT YEAR : 1957



1966-67



1971



4.30 Even though India is still the largest producer and exporter of turmeric in the world, the recovery of the peak attained in 1956-57 has been severely impeded by competition from Pakistan, Burma, China (Mainland) and Formosa. China has already eroded a part of our market in Japan while Burma has reduced the size of our market in Ceylon.

4.31 The recovery and passing of our peak in exports of 13,158 tonnes depends on a recovery of our production beyond 160,000 tonnes, some diversion from home consumption which is already excessive perhaps by a cess, and by a sales promotion drive to recover our markets in Ceylon, Iran and Japan.

4.32 No special incentives for this purpose seem necessary as Alleppey Turmeric is still in favour and Madras turmeric can be produced under conditions of substantial profitability after devaluation. The present turmeric price at Sangli at Rs. 2.5 per kg. is almost double of the price prevailing a year ago. The increase in prices is likely to raise production once again but our selling prices abroad require prices at least 20 per cent lower than currently. This is feasible without monetary incentives since production costs are still well below Rs. 1.5 per kg.

4.33 The proposed target for 1970-71 is, therefore, placed higher than the peak at 16,500; 15,000 tonnes in "old" but still expanding markets and about 1,500 tonnes for experimental sales to Eastern Europe where an entry must be made.

4.34 The erosion of our foreign markets has been caused by the high price of our turmeric. According to European imports, Chinese turmeric is as good in quality as Indian turmeric while in price it is 20 per cent cheaper. This also applies to exports from Burma to Ceylon where our share of the market has been reduced from 90 per cent to hardly 30 per cent.

4.35 All the Alleppey turmeric produced in India is exported to the U.S.A., but because of reduced crop in 1967, the volume of exports was almost halved in 1967 as compared to 1966. Concerted efforts need to be made to increase the output of Alleppey Turmeric which has a ready market in the United States and is equally acceptable in Europe.

4.36 Recent researches have revealed prospects of increased yield if the findings are passed on to the turmeric growers in a systematic manner. Particular mention needs to be made of the research work done at the Turmeric Research Station at Pedpalem (Andhra Pradesh) where an important selection of Duggirala type turmeric has been identified with an increased yield of 10 per cent. It is also tolerant to "leaf spot" when isolated.

V. Strategy for Increased Export of Chillies: 1971

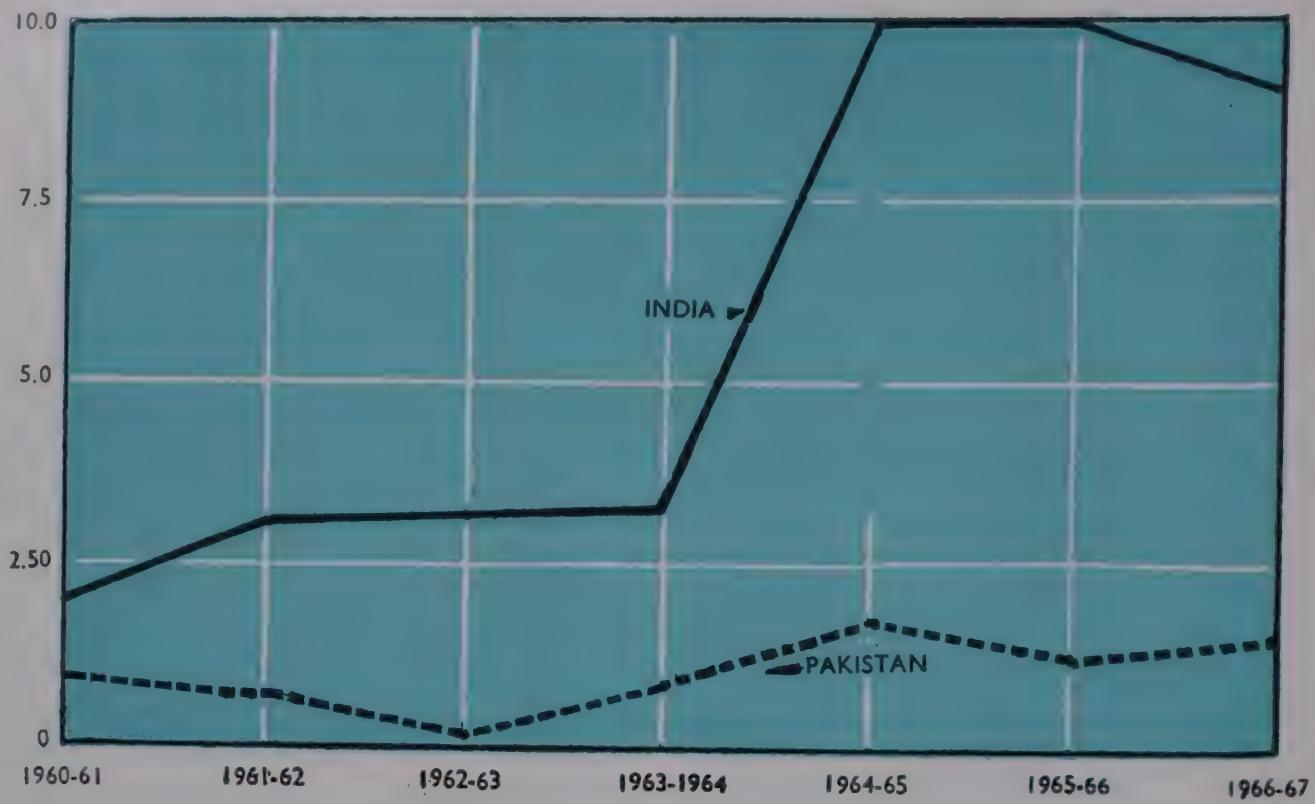
4.37 Chillies present an area where the recovery of a peak represents no challenge but an acceptance of defeat. Of India's production of over 400,000 tonnes in 1966-67, if we exclude Ceylon where a peak of about 12,000 tonnes was reached in 1963-64, India has not exported even 1,000 tonnes to any other country. To accept exports of 12,086 tonnes by 1971 will imply that our strategy is still based on the Ceylon market and no other. Therefore, here at least a major change in outlook and markets is imperative.

4.38 Next to Ceylon, the United States is the most attractive market for chillies. United States importers, however, with the Food and Drug Administration Regulations lay down stringent conditions for compliance before Indian chillies enter that market substantially. The Scoville Test for heat content is the single most important condition Indian chillies will need to pass for entry into this market. Besides, chillies have to keep up to the standards of requisite cleanliness

TRADE IN TURMERIC
1960-61-1966-67

WORLD'S MAJOR EXPORTING COUNTRIES

THOUSAND TONNES



THOUSAND TONNES

WORLD'S MAJOR IMPORTING COUNTRIES

2000

1500

1000

500

0

IMPORTS FROM INDIA
IMPORTS FROM OTHERS

JAPAN
1966

U.S.A.
1967

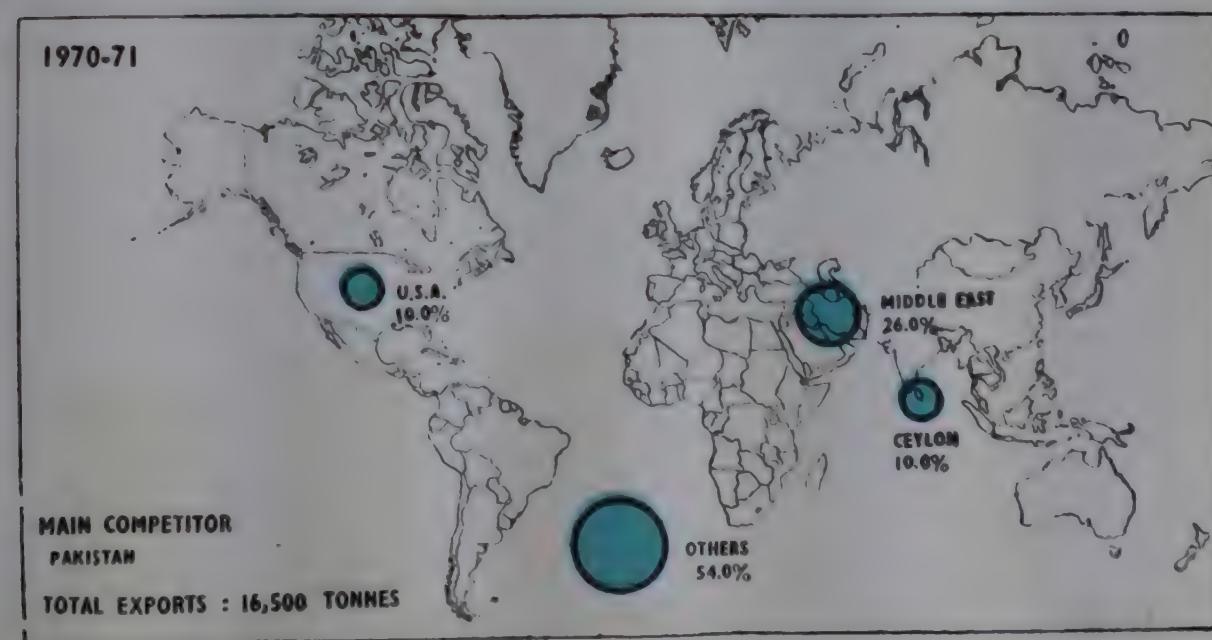
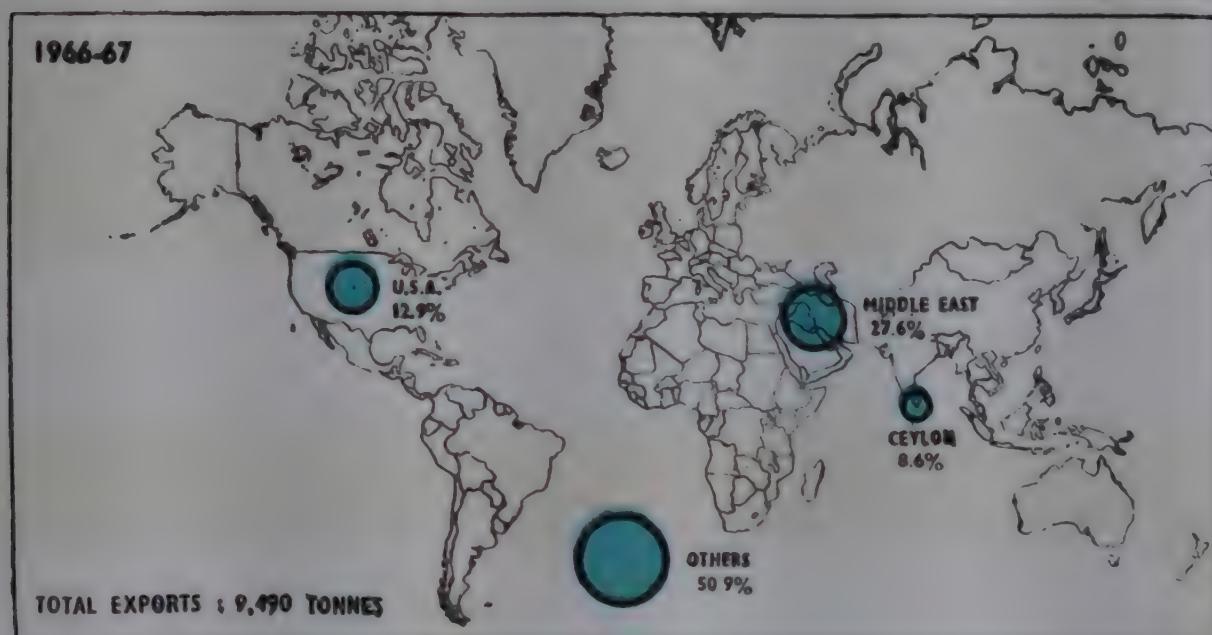
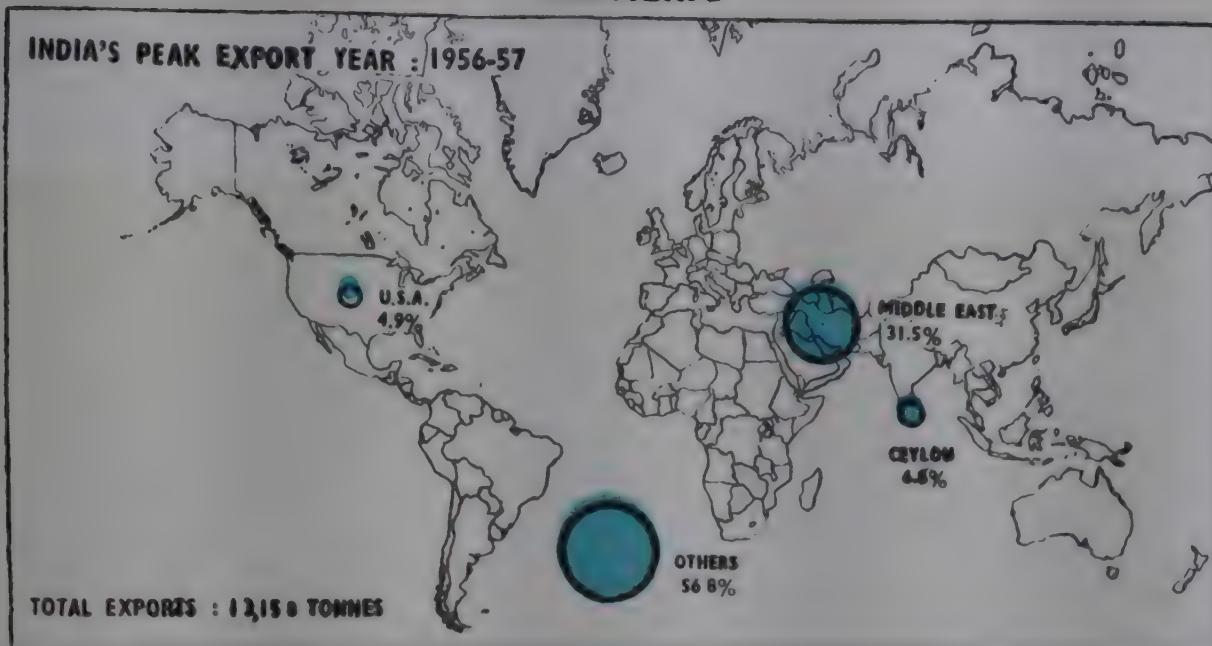
CEYLON
1967

BAHRAIN
1967

U.K.
1966-67



TURMERIC



and colour (deep red is generally preferred) and should be without stems and caps, and unblemished and free from mould.

4.39 India has been excluded from this attractive market largely by failure to guarantee unblemished quality. The Scoville Test for measuring the heat content of the chillies has only recently been formulated by the Food and Technological Research Institute, and it varies slightly from ASTA's. It is felt that the Indian standards on moisture content are not stringent enough.

4.40 There are opportunities for substantial exports to the United States, if Indian chillies of requisite specifications and gradings can be supplied. It is essential that immediate adjustment in Indian Agmark Standards should be carried out.

4.41 The imports of chillies into the United States were at a peak in 1964 with about 5,500 tonnes. It is likely to increase to about 7,000 tonnes by 1971. It will not be too optimistic if corrective action is taken to win 30 per cent of that market. This would put our exports to the United States at around 2,000 tonnes by 1971. Canada is yet another market which is still to be explored. The Middle East is an area where India exports a little, but opportunities for more exist. There is also a limited market in a few other countries of Eastern and Western Europe. The exports to these countries are estimated to work out to at least a thousand tonnes by 1971.

4.42 Thus, a projection to the year 1971, places India's exports at 15,000 tonnes—12,000 tonnes to Ceylon, 2,000 tonnes to U.S.A. and 1,000 tonnes to other countries.

4.43 There is a specific market for chilli powder and chilli sauce in some countries and possibilities of exports from India are to be explored. There is the danger of infestation of chilli powder and this necessitates research and quality control to ensure an acceptable product.

4.44 The Japanese chillies—'Hontaka' and 'Sontaka'—have a reputation in the United States and Canada. These chillies are unblemished, have no stalks or caps, have the appropriate deep red colour and fully qualify by the Scoville test. Every process in Japan from the sowing of seeds is carefully supervised and strict inspection of quality and cleanliness is carried out. Efforts should be made to follow these principles in India as well.

**A BALANCE SHEET OF WORLD TRADE IN CHILLIES :
PEAK YEAR 1963-64**

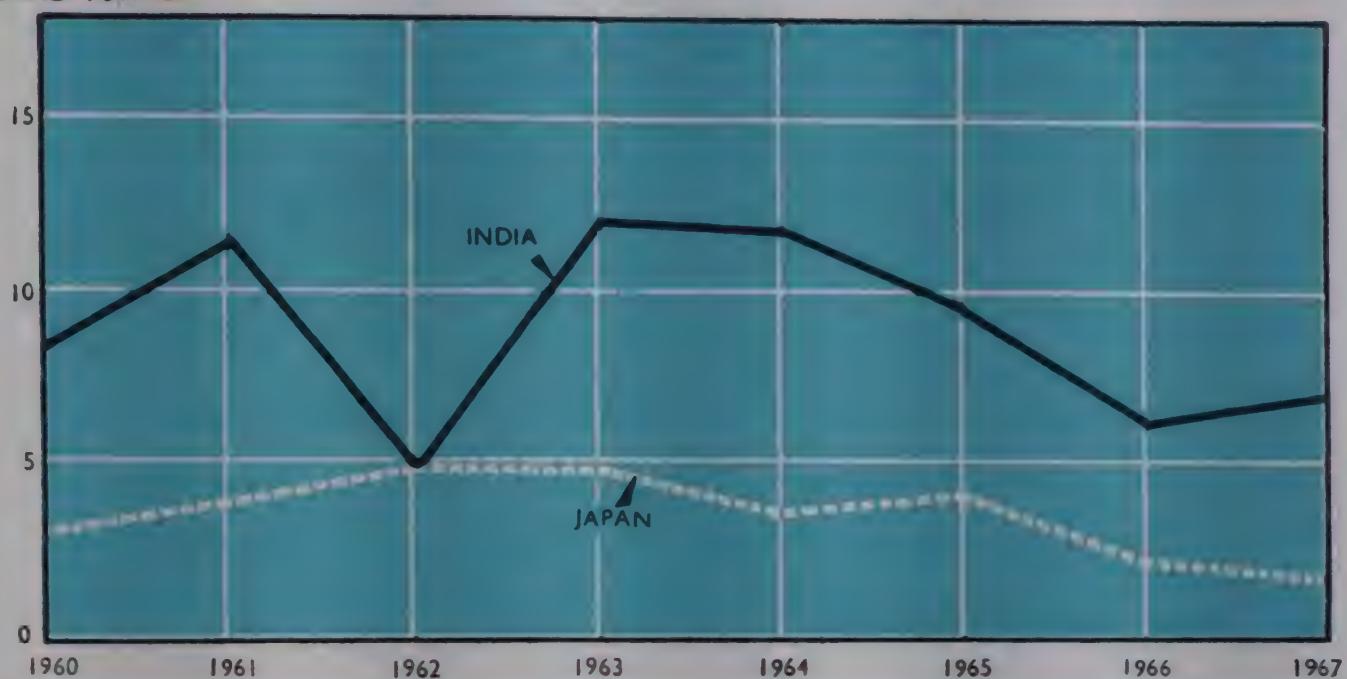
Producers	Quantity Exported (in thousand tonnes)	Consuming Countries		
		Ceylon	U.S.A.	Others
India	12.09	11.89	—	0.20
Japan	4.78	3.57	1.08	0.13
Mexico	1.58	—	1.50	0.08
TOTAL	18.45	15.46	2.58	0.41

For Japan and Mexico the figures pertain to the Calendar Year 1963.

TRADE IN CHILLIES 1960-1967

WORLD'S MAJOR EXPORTING COUNTRIES

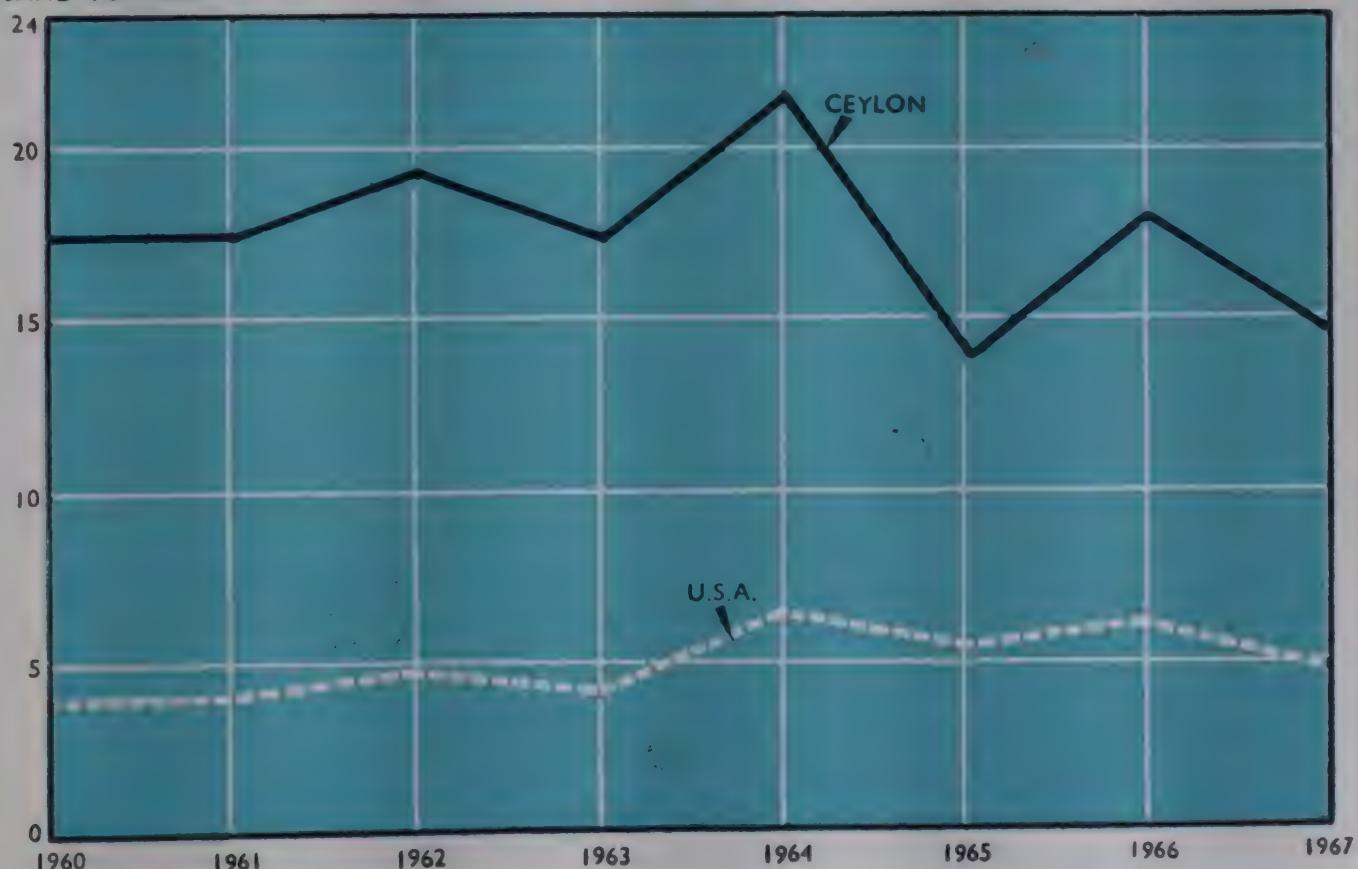
THOUSAND TONNES



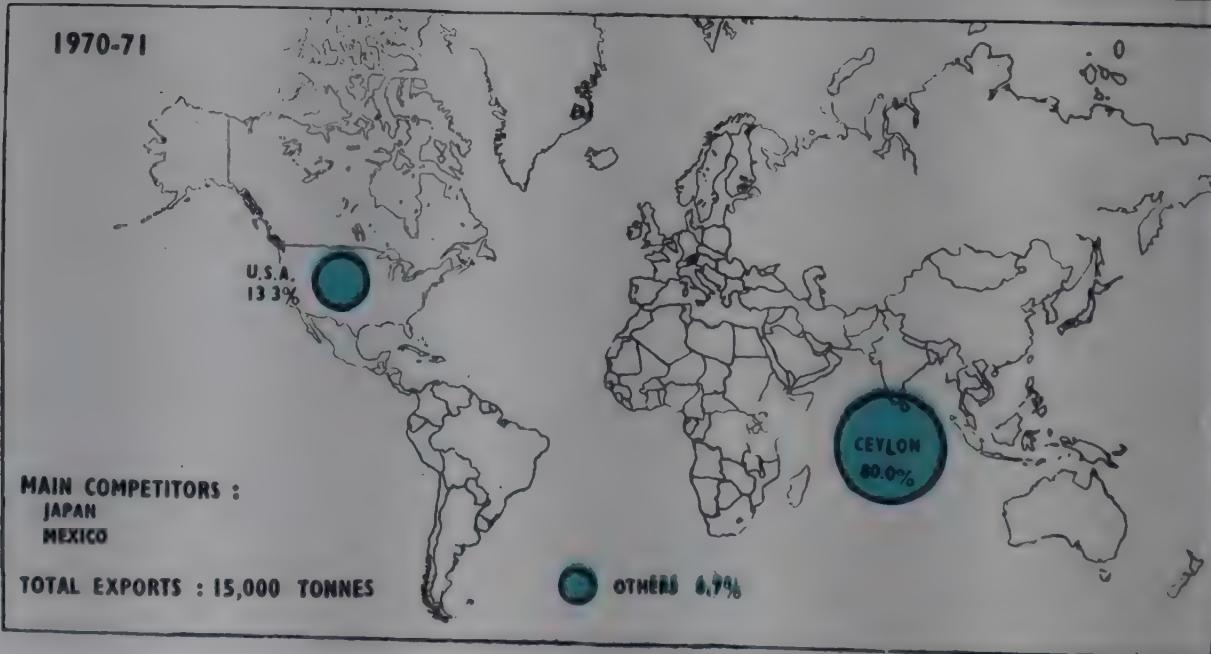
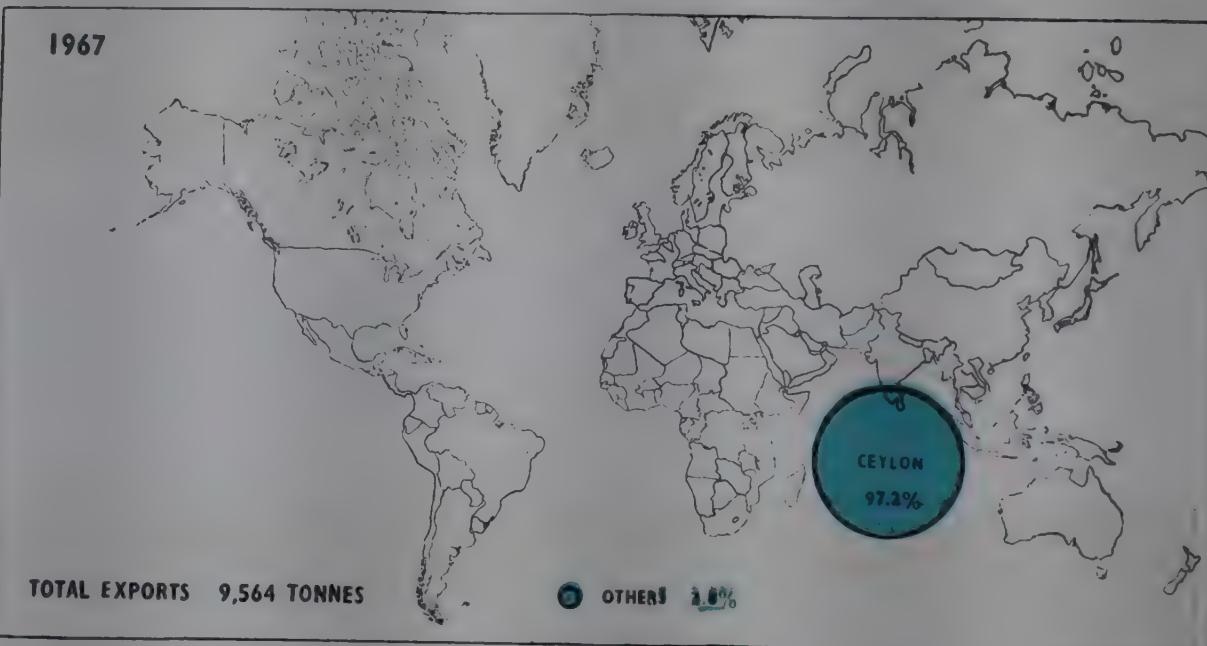
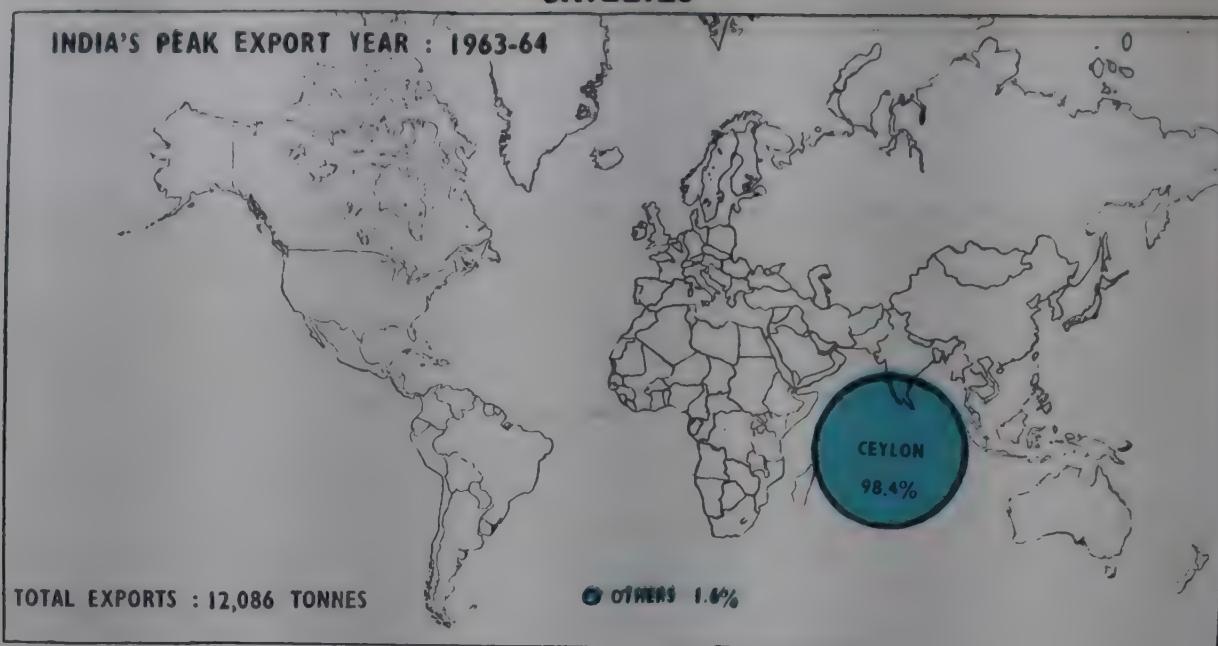
INDIA'S FIGURES ARE FOR FINANCIAL YEARS

WORLD'S MAJOR IMPORTING COUNTRIES

THOUSAND TONNES



CHILLIES



A BALANCE SHEET OF WORLD TRADE IN CHILLIES : 1957

Producers	Quantity Exported (in thousand tonnes)	Consuming Countries		
		Ceylon	U.S.A.	Others
India	9.56	9.28	0.08	0.20
Japan	1.69	—	1.56	0.13
Mexico	2.59	—	2.59	—
TOTAL	13.84	9.28	4.23	0.33

**A BALANCE SHEET OF WORLD TRADE IN CHILLIES
(ESTIMATED FOR 1971)**

Producers	Qty. exported (in thousand tonnes)	Consuming Countries		
		Ceylon	U.S.A.	Others
India	15.00	12.00	2.00	1.00
Japan	5.00	2.00	2.00	1.00
Mexico	3.00	—	3.00	—
TOTAL	23.00	14.00	7.00	2.00

VI. Minor spices and spice seeds

4.45 The minor spices included in the study are: Coriander Seed, Aniseed, Garlic, Cassia, Tejpata, Nutmeg and Mace and Curry Powder and Paste. In the case of these spices our export possibilities are limited, on the one hand by competition from other producers like Morocco and Rumania in the case of Coriander, Spain in the case of Aniseed, U.K. and U.S.A. in the case of Curry powder, and on the other hand by limited production as in the case of nutmeg and mace and cassia. Therefore, in order to increase the exports of these spices, a two-pronged attack will be essential, one at the recovery of the markets and second at increasing production.

4.46 Increased production, in fact, is essential in the case of all minor spices. This alone will make increased supply possible which will enable us to be competitive in the international market pricewise. Apart from this much higher standards of cleanliness than hitherto practised will need to be observed. For this purpose, may be, we have to import the most modern machinery available, as is recommended elsewhere in this Report. Some restrictions that are currently in existence in regard to exports to Pakistan and Afghanistan, the two high spice consuming neighbours, should be done away with immediately. In the case of nutmeg and mace effort has to be directed, in the first instance, on increased production. We have established that an extensive market exists which promises high profitability rates on current investment in this field. Increased production of cassia is also recommended, though advance action to maintain standards of cleanliness in this case will be essential for earning foreign exchange. For curry powder and paste standardization of the mixture formula is essential. Also after the formula is standardised it is essential that its ingredients are maintained in the same ratio even if the relative prices of different ingredients change in a manner as to make a different mix more profitable. It is in providing a uniform quality in a sustained manner that we can win the confidence of our customers.

4.47 It may also be pointed out that this study does not extend itself to some spices, particularly spice seeds. These are: Celery Seed, Dill Seed, Sesame Seed, Cumin Seed, Fennel Seed, and Fennugreek Seed. Of these, at present, celery seed exports amount to about Rs. 50 lacs per annum. Fennel seed, cumin seed and fennugreek seed also contribute about Rs. 15 lacs each to our annual export earnings. Sesame seed and dill seed have good future prospects as export earners. U.S.A. offers a large market for white sesame seed. No detailed study of the export prospects for these seeds has been made and therefore no export strategy for these seeds has been recommended in this report. However, we consider it desirable, as does our Consultant, Mr Edward B. Polak, whose views on this subject appear elsewhere in this Report, that a separate study be undertaken:— (a) to evaluate the export prospects for these spice seeds in different markets abroad; and (b) to evolve export strategies suitable for each of the foreign markets. May be, like the spices already studied, we have in this case also to evolve a strategy for increased production of these spice seeds.

4.48 Of the minor spices covered, export earnings from coriander seed are expected to go up from the present Rs. 44 lacs to Rs. 90 lacs in 1970-71 and further to Rs. 180 lacs in 1975-76. It is expected that by 1970-71, India will be able to meet the entire demand of Ceylon, Malaya and Singapore besides expanding her exports to the U.S.A. In terms of volume it is anticipated that we will export 8500 tonnes by 1970-71 and about 15000 tonnes by 1975-76. It may be observed that the level of exports at 8500 tonnes proposed for 1970-71 is not much different from the level of exports at 8293 tonnes observed in 1961-62.

4.49 Exports of Curry powder and paste have been another important source of foreign exchange earnings in the category of minor spices. The exchange earnings from this source in 1967-68 amounted to Rs. 51 lacs. It is expected that the exchange earnings from exports of curry powder and paste will go up to about Rs. 100 lacs by 1970-71 and further to Rs. 150 lacs by 1975-76. In order to bring about this level of exports the cost of production of curry powder and paste in India needs to be brought down to the international level. For this purpose the exotic spices which are not available in India should be imported and distributed to this industry possibly through the State Trading Corporation. Similarly tinplate also should be made available to this industry at international prices. This industry badly needs modernisation as also standardisation. Standardisation is particularly necessary in connection with spice ratios which ought to be fixed keeping in view the requirements in foreign markets and should not be altered even if the relative prices of different mixtures going into the final product change. It has been observed that very often manufacturers tend to vary spice ratios in response to the variations in prices of various ingredients. This leads to loss of faith in the final product. Exports of curry powder also need to be supported by measures of external publicity including demonstrations.

4.50 The other minor spices studied in this Report viz. aniseed, cassia, garlic, tejpata and nutmeg and mace do not contribute much to our foreign exchange earnings as at present. The level of exchange earnings is hardly about Rs. 25 lacs per annum. Some of these spices, however, offer some scope for increasing exports, particularly garlic, aniseed and cassia. It is expected that by 1970-71 these three minor spices will bring in about Rs. 50 lacs worth of foreign exchange. The level of exchange earnings will go up to about Rs. 62 lacs by 1975-76.

4.51 In order to achieve this level of export earnings in the case of these minor spices some special effort will need to be made. In the case of aniseed, India could expand her production by employing intensive cultivation methods with proper treatment of fertilizers. Government can also assist the export of aniseed by lifting many restrictions on the exports of this item to neighbouring countries like Pakistan and Afghanistan. Besides the Asian zone, India should explore new markets in U.S.A., Canada and European countries.

4.52 Exports of cassia from this country to the U.S.A. suffer from the suspicion of being of Chinese origin. As the U.S.A. is the biggest market for cassia, it will be in the fitness of things that some sort of arrangement regarding certification of India origin is worked out with the United States authorities either through Government channels or trade associations. Again, it may be mentioned that the cleanliness of Indonesian cassia has been constantly deteriorating due to lesser care during harvesting and deficient food storage facilities as a result of which all Indonesian cassia shipped to the U.S.A. is being rejected by the Food and Drug Administration and is required to be re-cleaned. This may go in favour of acceptance of Indian exports of cassia.

4.53 The chances of Indian cassia being accepted in the U.S.A. are much better because cassia production in India has to start almost from scratch and, therefore, cassia of the best quality, for example, Saigon variety can be grown in this country. Furthermore, as and when production starts proper care in harvesting and efficient storage facilities will ensure ready acceptance of our product to the foreign buyers, particularly to the U.S. buyers. The level of quality can be further assured to foreign buyers through an Agmark standard.

4.54 Nutmeg and mace is another item which offers some small export prospects, but the yield is not expected to go up significantly because the production is likely to remain limited at least for a long time to come. India's exports of mace as at present are nominal and export earnings negligible. In the case of nutmeg, India is in deficit and her import of this item was at the peak of 67 tonnes in 1960-61 which steadily fell to 19 tonnes in 1966-67. However, a large quantity (about 50 tonnes) was imported during 1966 involving about Rs. 6 lacs of foreign exchange. It is expected that this trend will be reversed if India develops her production of nutmeg at least to the extent of meeting her own demand in future without any imports. The possibility of export of mace will remain and it is expected that by 1970-71, about 15 tonnes of mace will be exported. The export level of mace is expected to rise to about 25 tonnes in 1975-76. It is expected that this level of exports of mace will earn India foreign exchange worth Rs. 2 lacs in 1975-76 and worth about a lac in 1970-71.

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V. Research And Scientific Applications

5.1 The major weakness of the spice industry and trade in India is the failure to modernise itself in terms of the use of scientific research in production, particularly in the control of pests and plant diseases, and in the preparation of scientific standards now increasingly required in buying countries. Selling by sample and/or grade is not the same as selling by ASTA chemical standards since AGMARK grades do not contain provision for some of the standards required such as, for example, heat content of chillies measured by the Scoville Test. The introduction of standards of an increasingly stringent kind on percentages of volatile and non-volatile oils, fibre content and so on based on laboratory tests implies properly equipped laboratories at times of preparation and export of produce. Increasing awareness of standards of this kind has not meant adequate recourse to science both for productivity and for quality and cleanliness. Cleaning machines have only recently been introduced and are still inadequately employed. A major revolution in outlook of scientists, producers and traders is still required.

5.2 No firm estimate of the loss in production in India's major spices due to pests and plant diseases exist but it is certain that this single factor is large enough to account for falls in production since the peak production was recorded. Thus if wilt disease in the case of pepper and katte in the case of cardamom could have been overcome before they exacted the toll they have, India's production in a normal year, could, in these cases, it is estimated have passed peak production since acreage in neither case has fallen. Rhizome rot for ginger and turmeric could also have been fairly well controlled since this is a seed borne disease which can be controlled largely by seed disinfection of infestation. Anthracnose in chillies can be completely controlled by seed treatment and Blight and Leaf spot in the case of cumin seed and sesame respectively can at least be partially controlled. All these are illustrations of techniques very inadequately in use.

5.3 These are very inadequate illustrations of all that dynamic organised research can do for production. The tragedy of the current situation is that, for almost every spice, applied research in the field over the last thirty years has been negligible. Practically no new variety of greater productivity has replaced older and non-disease procf varieties, although improved varieties both in respect of yield and disease resistance are believed to exist. There are five separate research centres for pepper, cardamom, ginger, turmeric and chillies. They have only this in common that they pursue their research in almost complete isolation and detachment from one another and from the application of their research to immediate problems of productivity in the field. Research has not yet been sold either to the producers or to the trade in such a manner that the knowledge of science applications in the spice field has penetrated either the production or standards field. Many ASTA standards are still unknown to a large number of traders who operate still by samples instead of standards.

5.4 There are five broad areas of application of scientific research where a major reorganisation of both theoretical and applied research is imperative.

(1) Study of Soils and Climatic Factors to obtain the most suitable areas for new or intensive cultivation.

- (2) Study of Seeds or varieties best designed to produce the qualities required.
- (3) Study of Pesticides most suitable to control of diseases currently prevalent or likely to occur.
- (4) Application of Scientific Standards in listing and grading of produce.
- (5) An integration of theoretical and applied research with capacities of Governments, Central and State, producers and financial agencies to obtain the results desired in an orderly and predetermined manner.

5.5 The variations in productivity already noticed in the sections on historical performance of our major spices and in the costs of production currently of cardamom, ginger and turmeric suggest that productivity gains through the application of knowledge under the first three heads are not being obtained. Productivity under all spices is currently lower, not higher, than in the peak production or export year. If productivity could have been maintained by the application of research—and research agencies all contend this is within our reach—the fall in productivity can in large measure be attributed to a major failure to apply existing knowledge over the last decade. Much more depends on the application of this knowledge to production and to the testing of produce offered for sale abroad than on any other single factor in the whole range of our recommendations. Indeed, India's major weakness in this industry is basically a lack of appreciation of what science can offer both in the production and in the marketing field.



VI. Administration and Organisation

6.1 The words administration and organisation refer to the areas of Government operation and inter-sectoral co-ordination inside the trade. The spice industry is included in the area of "traditional" exports such as tea, jute goods and hides and skins. Exposed to the progressive improvement of standards in the buying countries and pressures for modern management within, one might have expected winds of change in the organisation and outlook of the industry. There has, however, been only limited change in techniques of production, in the application of research whether in production or marketing, and restricted appreciation of major areas of co-ordinated activity such as an effective trade association covering all sectors. Government regulation is also disjointed. Research agencies—one for pepper, another for cardamom, a third for ginger, a fourth for turmeric—work in an unco-ordinated manner. Cardamom has a special Cardamom Board under an Act; no other spice is similarly regulated. But even in cardamom, research responsibility is divided in practice and finance has not been geared to the serious challenge of katte disease. It is obvious if the exacting targets both for production and exports are to be reached, far more co-ordination and regulation of all agencies at work in the industry will be required. The instruments of co-ordination must be related to the advancement of export targets and, therefore, point to a pre-eminent role for the Ministry of Commerce in an integrated planning and development operation.

Statutory Boards

Cardamom

6.2 There is currently a statutory Cardamom Board established under the Indian Cardamom Act. Theoretically the Board is clothed with powers to develop and regulate the industry, but practice does not accord with the letter of the law. (1) The Board is not empowered to register cardamom holdings or to restrict cultivation to areas deemed most suitable for new development. (2) It is empowered to apply research but by an unwise distribution of funds, research initiation and general administration and co-ordination is predominantly with the Indian Council of Agricultural Research. There is need for immediate transfer of all research responsibilities to the Board for translation to the field from which the Indian Council of Agricultural Research is far removed. (3) Again with undivided responsibility, the Board must be given finance adequate to its task. It should have total sources of revenue of not less than Rs. 30 lakhs pcr annum.

6.3 Appropriately, the Cardamom Board is under the Ministry of Commerce. All the powers and responsibilities of the Board should, therefore, be exercised by one Ministry only—the Ministry of Commerce. This applies to all major spices so that the final responsibility for target achievement rests with one Ministry, though major co-operation from other Central Ministries and State Governments will be necessary all the time.

Pepper

6.4 For the maintenance of a buffer stock and for the execution of the pepper strategy for maintaining prices abroad, a Pepper Board, not dissimilar to the Cardamom Board, needs to be constituted.

6.5 In addition to powers of registration, research and development, the Pepper Board will need to be invested with powers of purchase for a buffer stock. Also with responsibility for storage and sale when required from such stock. These responsibilities are so wide and currently so controversial, that it is recommended that the Secretary of Commerce should at least for the first year be Chairman of a Board so constituted even though its members will be drawn predominantly from the trade, research organisations and appropriate financial institutions.

6.6 No Statutory Board for any other spice is recommended.

Non-Statutory Regulation by the Ministry

6.7 The fact that spices other than pepper and cardamom do not call for statutory boards does not imply that the Ministry can leave their administration in the current somewhat uncoordinated state. The recommendations that have been made in respect of a floor price for turmeric and an export incentive for ginger, for example, suggest that Government responsibility cannot be avoided since Government resources are being committed to the support of the industry. It is obvious that, if the export targets are achieved, both the direction and production strategy of export effort will require review from time to time. Therefore, the Ministry of Commerce will need a well-staffed cell to cope with the additional responsibilities which arise from the recommendations already made. These will include:

- (1) Determination and operation of floor prices wherever they are deemed necessary to maintain production at the level required to generate adequate export surpluses.
- (2) Determination of the range and character of fiscal incentives required to supplement the export effort in areas where such incentives have been shown to be necessary.
- (3) Liaison with Indian embassies abroad for the purpose of obtaining fruitful information on the performance of new export strategies designed specifically for strategic markets.
- (4) Co-ordination of Research, pure and applied, and of scientific testing and standards preparation, and
- (5) Integration of activities of all units in the private sector designed to play a significant role either in the production or export field.

Organisation of the Trade: An Indian ASTA?

6.8 This last function of organisation with the trade could best be achieved by the creation of a pyramid All-India Organisation similar in structure and purpose to the American Spice Trade Association (ASTA). This association has Production, Research, Arbitration and Public Relations Committees with sub-committees of the trade representing special interests.

6.9 Currently India has no integrated Spice Trade Association. There is no means of exercising discipline on members of the trade or co-ordinating their effort to achieve the objectives or the export targets envisaged. There is an urgent need for the constitution of a sound trade organisation harnessed to the achievement of the country's export policy in the spice field.

Quality Control

6.10 There is some confusion on what might be described as the area of the Indian Standards Institution operation in devising standards and those develop-

ed by AGMARK. The appropriate line of demarcation should be that spice standards are developed after consultation with AGMARK in the Indian Standards Institution. Their application and maintenance should be the province of AGMARK. Currently there is developing an unhealthy rivalry leading both to duplication and waste of scarce technical and monetary resources. This is one of the many areas where administrative streamlining is necessary.

6.11 The new Central control of the industry recommended will be primarily concerned with research in production and testing, currently the province of the Ministry of Food and Agriculture. There is, however, an area of unnecessary intervention also in other Ministries, notably the Ministry of Health, via the Prevention of Food Adulteration Act. Under this Act, for example, the percentage of light berries of pepper allowed to be included in any pepper traded is limited to 2 per cent. This is based on an erroneous understanding of the nature of light berries which carry no injurious element. The provision seems to have been copied mechanically from an old Food and Drug Regulation limitation in the United States designed to make more "bold" varieties available in that country. Currently India is short of "bold" varieties for both the United States and the Italian markets. The existing redundant limitation on the consumption of light berries internally greatly limits our capacity to supply. For an exporting country there should be no restrictions whatsoever.

Taxation

6.12 It is also necessary to draw attention briefly here to some existing anomalies on taxation which need correction.

6.13 Firstly, there is an export duty on "pinheads" of pepper for which there is no market within. The Ministry of Finance is probably not aware that the export duty of 50 paise per kg. is currently making export impossible. This duty has outlived its usefulness even as a source of revenue. Secondly, there is a medley of levies both at Central and State levels via plantation tax, sales tax, cesses and income tax which need codification. It is suggested in each case there should be an adequate Central cess (not on exports only) to warrant the elimination of separate and harassing local levies at many points, with many authorities. The State Governments could be reimbursed for current losses of revenue. Thirdly, allocations for research are inadequate particularly for pepper and cardamom. Apart from the unification of levies, an additional cess actually directed to removal of plant diseases, wilt for pepper and katte for cardamom, would be justified. Fourthly as, has been indicated elsewhere, there is a case for ad hoc incentives, to be examined in detail for export of Cochin ginger and for a floor price for trumeric to stabilise its production.



VII. Retail Sales and Packaging

7.1 Retail Sales and Packaging provide a hardy annual at seminars dealing with practically every spice. It is argued plausibly that major opportunities exist in exploiting the "mark-up" on the value of spices before they reach the final consumer: also that this "mark-up" contains a large element of profit which India could secure by entering the retail business in affluent societies in the West.

7.2 The suggestion is plausible and has, therefore, had to be carefully examined in all the affluent countries visited: The United States, Canada, the United Kingdom, France, West Germany, Belgium, the Netherlands, Sweden, Australia and Japan. Circumstances are not the same everywhere but there is a marked similarity which is growing greater in the marketing of spices packaged for the final consumer. The super markets, departmental stores and bigger retailers are capturing a larger share of the total retail business. The small retailer with a relatively small turnover is being driven out because of his high level of costs and the very small margin of profit after these costs are covered. The opportunities for reduction in costs per unit except by a massive increase in turnover are minimal: the possibility of a disappearance of profits due to a relatively small fall in turnover is very large. Far from being an attractive business, the retailing of spices has become a marginal one for all except the large chain stores whose profit arises from massive turnover and great skill in the purely marketing function unconnected with spices as such.

7.3 The mark-up of between ten to twelve times initial c.i.f. price of spices is deceptive. Fully a third—though occasionally a little less—goes to the store which makes the final sales. Nearly a third represents the costs of supply from grinding and blending to transporting to wholesale points of distribution. About half of the remainder represents publicity and distribution staff. In the net result the profit accruing even to the giants in the industry is, roughly, six per cent on turnover. As an illustration it might be mentioned that in the case of McCormick and Company, Baltimore, the biggest spice firm in the world, the balance sheet shows a profit before tax of \$5.5 million on a turnover of \$82 million.

7.4 No Indian undertaking is likely to command in all the affluent societies together sales of even a fifth of this order since the current figure represents the marketing effort of over fifty years in many cases. Brand names and the "whole range" meaning almost every spice or spice combination dominate the marketing strategy. India has no brand names: except in combination with one of the great marketing houses, an individual Indian effort will probably never break even; meanwhile it will have alienated many of our largest buyers, whose goodwill is an essential condition of our expanding markets in these countries.

7.5 While a major marketing effort except in collaboration seems doomed to failure, there is scope in limited fields for selling packaged spices for particular groups provided great care is taken on supplying exactly what the market desires. Examples are a small special plastic pepper mill used in Italy for departmental stores which sell Malabar or Tellicherry Bold: containers far more attractive than those used for Indian curry powder for markets such as Canada who accept an Indian blend in large quantities without further mixing. A special team from the Spices Export Promotion Council should proceed to Departmental Stores in selected countries with new products thus packaged. This will have some publicity value: conceivably it could earn, perhaps 25 to 30 lakhs of additional foreign exchange.

VIII. Publicity and Public Relations

8.1 Packaging is part of the image of Indian spices abroad; but it would be a great mistake to suppose that the market is made either by the container or the markings which associate the image with the Indian Union. In Canada, Vancouver, for example, Nabob Foods which has used something very similar to Air India's Maharaja has not found its symbol a pathway to greatness in spite of the great goodwill that India enjoys in that country. We should welcome the association of our spices with the Indian name in retail advertisements: and this in fact happens in many cases. There is no evidence in the cases examined that this is a strong selling point. This is unlikely to be disproved by a costly new campaign.

8.2 What has emerged as a result of numerous discussions with traders in almost every country is that Quality and Service added to Commercial Integrity are reckoned far higher than an Indian background or an Indian brand name. Quality implies in most cases adherence everywhere to the grade ordered: AGMARK grades are acceptable though they need to be more widely known. But quality is not cleanliness. A grade might be matched in a consignment but it may be an insanitary supply, meaning it contains both foreign and unacceptable contaminated matter. Many Indian consignments have recently had to be cleaned in the United States. This is damaging alike to the trade and the image of AGMARK which, though not directly involved, receives the backwash of disapproval. It is assumed that the Indian authorities' inspection has been incomplete.

8.3 A better and more thorough inspection at ports of shipment is necessary. No shipper who has offended should escape lightly. A powerful unit at the ports must apply inspection standards as in Japan for chillies and in the United States by the Food and Drug Administration everywhere. Finally, penalties imposed for bad quality or for lack of cleanliness must be quickly accepted where they are bonafide and payments in foreign exchange remitted without large delays, said to be due to Reserve Bank regulations.

8.4 Some means must be found to empower Consul-Generals of India abroad to make prompt payment in foreign exchange to aggrieved parties when bonafide claims, quality or otherwise, are approved by the Indian Consul-General and on arbitration awards by recognised and highly reputed Arbitration Tribunals. A small revolving convertible currency fund should be placed at the disposal of the Indian Consul-General's office to make such payments promptly. The rupee payment to be made to the Reserve Bank of India by the Indian shipper should be sufficient for acceptance of the foreign exchange obligation abroad.

8.5 The damage done by such delays is great. It is, of course, nowhere comparable to dangers due to default. There have been two such cases recently in the United States. Black listing in case of deliberate default should be irrevocable. A scrutiny of new exporters seems desirable.

8.6 While a major publicity campaign is not currently necessary, participation with leading Spices Associations abroad in a general publicity programme is a condition of extended goodwill. The film "Pepper—the Rajah of Spices" is an example of the fruit of co-operation of this kind. Recipe preparation and propagation; new spice use development exchange; research results in the medical and

pharmaceutical field: all these apart from developing markets are instruments of goodwill which have not been adequately promoted or sustained.

8.7 Apart from a dynamic publicity operation similar to ASTA's in the United States, in association with local organisations, there needs to be an Indian operation tailored to the specific markets chosen for protection or recovery. These are, among others, the Middle East for cardamom and ginger, Sweden for cardamom, Ceylon and Japan for turmeric. Publicity is likely to be ineffective when broadcast in these countries; what is required is a hard selling person-to-person operation. In all these countries, and several others—notably Canada, the United Kingdom and France—the Indian spice industry has been conspicuous largely by its absence and its relegation of this work to agents. In Brussels, the Spices Export Promotion Council has an active representative for the European Common Market. This is at least a step in the right direction though dividends are not yet apparent.

8.8 One such spice representative needs to be added in New York and the Consul-General there with his Deputy should be associated intimately with a drive to recapture lost markets particularly for pepper and ginger in that country as well as for a major entrance of chillies in which India can do well provided she is organised for the task. An integrated sales effort in the United States has not been attempted, while Indonesia has a resourceful American selling effectively her new image of efficiency in the spice field. Goodwill was found to be abundant: unfortunately it is largely unused both in the United States and Canada. This is not associated with hippies, the Nehru jacket or the Maharishi's transcendental meditation. It is part of an appreciation of India's products and capacity: it needs, however, constant reinforcement by personal contacts of the right type.

8.9 Very inadequate use has been made in publicity or sales literature of medicinal effects of spice consumption. The Max-Plank-Institut fur Ernahrungsphysiologie, 46 Dortmund, West Germany has conducted research over many years on some important consequences of spice intake which suggest that physiological results are favourable. Dr. H. Glatzel, Director of the Max-Plank-Institut sums up these results as follows*:

"Spices are food components that affect many functional processes. Spices intensify salivary flow and the secretion of amylase, neuraminic acid, and hexosamines. They favour the cleaning of the oral cavity from food adhesion and bacteria, they may help to check infections and caries and they may help to protect the mucous membrane against thermic, mechanical, and chemical irritation. The secretion of saliva rich in amylase facilitates the starch digestion in the stomach and in this way it renders the meals rich in carbohydrates more digestible. Spices possibly activate the adreno-cortical function and fortify this way the resistance and the physical and psychical capacity. Stroke volume, blood pressure and stroke frequency can be diminished or augmented by means of spices in a determined way. The significance of these possibilities is evident with regard to the sick whose heart must be discharged and to the sportsman whose heart will be qualified to higher performance. Spices inhibit thrombous formation and accelerate thrombolysis".

* Physiological Aspects of Flavour Compounds
Bibl. "Nutr. Dieta" Vol. 9 pp. 71-86 (Karger/Basel, New York 1967)

IX Some Investment Opportunities

9.1 A market believed to have the growth potential, already outlined, obviously has corresponding investment opportunities. Much of this investment which involves deployment of additional working capital under existing agencies cannot be properly described as a new investment opportunity for those currently outside the trade. On the other hand, there are at least five major new opportunities which are recommended for detailed feasibility studies for new industries. These are: (1) Oleoresin manufacture based predominantly on pepper; (2) New Cardamom Cultivation based on knowledge of both seed and plant protection and soil suitability; (3) Improved seed and improved varieties supply for the whole spice industry; (4) A Commercial Testing Laboratory operating both at Cochin and Bombay; and (5) Central product cleaning and packaging units so that exporters can be assured of quality standards without all making separate investments of their own for cleaning machines. Short notes on each of the following are appended.

1. Oleoresin Manufacture
2. Cardamom Cultivation
3. Improved Seed and Improved Variety Units.
4. Spice Testing Laboratories: Cochin and Bombay
5. Central Spice Cleaning and Packaging Unit: Cochin and Bombay.

I. Oleoresin Manufacture

The Oleoresin Market: U.S.A.

9.2 So far as pepper is concerned, there is a changing use of pepper which at first sight might look as though it may make a major difference to the rate of export of black pepper berries. This is in the marked growth of Pepper Oleoresin, an extraction with a selected volatile organic solvent which retains in a mixture of the essential oil, the organic soluble resin and related materials the flavouring capacity of a spice in a much reduced and more convenient form. Both black and white pepper are currently used for Pepper Oleoresins, but there seems to be no special advantage which white pepper enjoys so that a shift to white pepper on this account is not currently contemplated. On the other hand, there is evidence that lighter berries are equally, and sometimes more, suitable for oleoresins because of higher essential oil content per pound than are the heavy berries. There may, therefore, be a decline in demand—to the extent of oleoresin use—for the standard Malabar bold berries. It is obvious where the form of the pepper used is of no account since the pepper essence is dissolved in the oleoresin that “appearane” premia will disappear. Thus a mild shift towards lighter berries might appear.

9.3 Oleoresin manufacture represents one area where processed spices can enter the U.S. market; there is a major advantage from proximity to raw materials, saving of ocean freight and low labour costs.

9.4 Both because oleoresin use has risen rapidly in the meat packaging industry in the United States—all the greatest meat packaging firms have shifted to oleoresin use—one might be tempted to assume a much greater share of the pepper

market assigned to such uses. This is not the case. As nearly as could be ascertained both in Canada and the United States, only about a tenth of imported pepper, black or white, is so committed. The market for oleoresins seems to have stabilised itself now and the best estimate given in the course of enquiries in both countries is that the growth rate of oleoresin pepper use is the same as the growth rate of pepper. This is largely because the bulk of this demand is associated with meat packaging and convenience foods which happen to be growing at the same rate. Meat and pepper are likely to grow between 3 and 3.5 per cent from 1968 to 1976, both being ingredients in a very mildly changing per capita food consumption pattern.

9.5 To the extent that India decides to capture a portion of this market for pepper oleoresins (as she should) the corresponding pepper exports will not materialise. An adjustment for this factor needs to be made after India's manufacturing plans are complete for net earnings of foreign exchange. Provisionally, if one assumes the oleoresin content of pepper is 12½% one might argue that about eight times the weight of pepper oleoresin exported from India will be lost from our exports of pepper to the United States. On the other hand, there are possible reductions in freight charges and a much greater unit price for oleoresin pepper, reckoned to have a spice equivalent of 4.5 to 6 per cent, will be obtained for India. One oleoresin plant with appropriate foreign collaboration has been licensed. There is room for another, perhaps of the same capacity.

9.6 If in addition to the oleoresin plant already sanctioned, another unit of roughly the same size is sanctioned, it could be in operation shortly after 1971. The oleoresin market in the United States is very competitive, but it is possible that sales from India of Rs. 3 crores could be absorbed, though information that could be secured on this point abroad was scanty.

9.7 It is obvious that to bring about this additional realisation, adequate collaboration arrangements must be concluded. One view presented in the United States was that "know-how" is very firmly held by only a few firms. Another view is that while registered trade marks are highly prized, the area of secret knowledge in this field is small.

Small-Scale Operation

9.8 In addition to the major unit licensed, there is in operation under the name of Techno-Chemical Industries, Calicut a small-scale unit which is actually selling oleoresins of pepper, cardamom, turmeric, ginger, capsicum and several minor spices. This is an interesting development, but it has not been possible to assess the economic advantages of such wide diversification. Some of the sales were admitted to be very small and one wonders whether it is worth while to keep all the 15 separate pilot plants in operation. Nevertheless here is an area also which needs detailed feasibility assessment. It is conceivable that at low Indian costs, with perhaps some reduction in quality, small-scale competitive units are possible. In the United States with a very high breakeven point, this small-scale production would be impossible.

9.9 It is recommended that a detailed feasibility study of oleoresin manufacture in the Indian Union be undertaken to ascertain the number of units, large and small, which can be appropriately licensed.

II. Cardamom Cultivation

9.10 Cardamom cultivation scientifically undertaken and constantly "protected" represents, in our opinion, one of the most profitable enterprises currently available in the Indian Union. Much of this profitability arises from the steep rise in prices in the last three years due predominantly to shortages of supply.

Unit values of different types of cardamom, and cardamom seeds are as shown in the table below. Selling prices have risen in the last three years by over 200%: costs may have risen by 50% largely because virtually the same overheads cover a much reduced output in the case of most estates. The reason for the reduced output is due predominantly to "katte" disease which has seriously affected the crop in several estates surveyed, but adverse climatic conditions in 1966-67 and 1967-68 have also contributed significantly.

**UNIT VALUES OF INDIA'S EXPORTS OF CARDAMOM,
BY TYPES : 1964-65 TO 1966-67**

S. No.	Type of cardamom	Unit Value—Rs. per tonne			Difference between 1964-65 and 1966-67	
		1964-65	1965-66	1966-67	Actual	% increase
1.	Cardamom small Alleppey Green	19265	39133	50204	+ 30939	+ 160.6
2.	Cardamom small Coorg Green	15883	35111	44267	+ 28384	+ 178.7
3.	Cardamom large	4591	6457	13015	+ 8424	+ 183.5
4.	Cardamom small—bleached or bleachable	18406	37717	48374	+ 29968	+ 162.8
5.	Cardamom small seeds	17726	37981	65241	+ 47515	+ 268.0
6.	Cardamom small others	11727	10846	41695	+ 29968	+ 255.5
TOTAL (Average)		16143	31566	47266	+ 31123	+ 192.8

9.11 Profitability margins turn significantly on the yield rate per acre both on old and new cultivations. Of 59 units surveyed by the Marketing Research Corporation of India, nearly 22 were unable to give any reliable figures from books maintained or checked. In the case of 37 where figures were maintained the conditions varied enormously. Some units were supremely efficient, reaching yields in good years of between 100 to 138 kgs. per acre. The table attached presents average costs in two sections, those above 50 acres and those of 50 acres and below. It suggests that the size of the plantation is not of itself a maker of efficiency, though obviously some minimum is necessary. In the 37 plantations as a whole average costs work up to Rs. 320 per acre, a figure which can be applied to a new garden after the third year. But the average yield of 12.70 Kgs. is obviously too low for a new investment. Yet this low figure, which would make average costs Rs. 25.22 per kg., would still in current conditions be quite profitable.

Yield Rates and Profitability:

9.12 With a view to estimating the pattern of yield rate over the last 7 years ending with 1967-68, seventeen cardamom plantations with the area of 50 or more acres were selected for a more detailed study. The highest yield rate of 138 Kgs. per acre was achieved by a firm with an area of 110 acres during 1963-64, while the lowest yield of 0.85 kgs. per acre was registered by another unit with an area of 108 acres in 1966-67. Such a vast difference in yield rate is attributed to the types of lands, location, fertility, irrigation facilities, diseases, and the suitability of the land to cardamom cultivation. This will continue to be the pattern of production for some time. As can be seen from the table attached the annual average yield rate of these firms works out to 41.2 kilogrammes in 1961-62 which has declined gradually and reached the low level of 14.2 kgs. per acre in 1966-67 and 18.5 kgs. per acre in 1967-68. The main reason for the low yield rate during the last two years was stated to be the drought conditions and untimely rains. Be-

sides this, "katte" disease also caused considerable damage to the plantations. The decline in yield rate can also be ascribed to the sudden (statistical) increase of about 33 per cent in the area under this plantation crop. Area under cardamom is given as 55000 hectares in 1964, 72800 hectares in 1965 and 73100 hectares in 1966. The low yield rate of 12.70 kgs. per acre in 1967-68 when all the plantations are put together may not be far from actuals for the units contained in the survey.

THE COSTS OF PRODUCTION OF CARDAMOM
(M.R.C.I. Survey, March-April 1968)

	<i>Expenditure</i>	<i>per year (Rs) **</i>	
	<i>Total of 37 farms</i>	<i>25 farms each with less than 50 acres</i>	<i>12 farms each with more than 50 acres</i>
1. Harvesting	1816.49 (25)	1297.56 (18)	518.93 (7)
2. Weeding	1129.58 (31)	847.82 (22)	281.76 (9)
3. Curing	1602.93 (33)	1278.97 (24)	323.96 (9)
4. Plant Protection	1711.58 (26)	1003.61 (19)	707.97 (7)
5. Other charges	472.04 (19)	279.02 (14)	193.02 (15)
Total Cost of Cultivation	7816.94* (37)	5056.98* (25)	(2759.96* (12)
6. Land Tax (Rs.)	125.26	71.45	53.81
7. Share of establishment charge (50% over cost of cultivation) (Rs.)	3908.47	2528.49	1379.98
Total Cost of Production (Rs.)	11850.67	7656.92	4193.75

AVERAGE EXPENDITURE PER ACRE (Rs.)

1. Harvesting	72.66	72.02	74.31
2. Weeding	36.44	38.54	31.31
3. Curing	48.55	53.30	36.00
4. Plant Protection	65.83	25.82	101.14
5. Other charges	24.84	19.93	38.60
Average Cost of Cultivation (per acre)	211.25	202.28	230.00
6. Land Tax	3.55	2.98	4.89
7. Shares of establishment charges	105.62	118.30	115.00
Average Cost of Production (per acre)	320.29	306.28	349.48
Total Acreage (Acres)	1634	600	1034
Total Production	20761.7	9361.7	11400.0
Average annual production of cardamom (per acre) (Kg)	12.70	16.60	11.02
Average Cost of Production Per Kilogramme (Rs.)	25.22	19.63	31.71

* The total cost of cultivation shows a higher figure than the straight total of items 1 to 5 as in some cases the cost of cultivation is given as an overall figure and not with breakdown for each head of expenditure.

Note : Figures in brackets represent the number of farms for which information for the corresponding item was available. These figures have been used for working out the average expenditure per acre.

9.13 For new cultivation, however, when lands are carefully selected and protective measures taken against diseased plants, a yield of 75 kgs. per acre from the fourth or fifth year is quite feasible. If cardamom land of this suitable kind costs Rs. 2000 per acre and cultivation costs for three years are reckoned high at Rs. 1000 per acre per year, investment per acre may be reckoned at Rs. 5000 per acre, over the first three years. Against this, return from the fourth to the fourteenth* year on an average crop of 75 kgs. per acre will be currently Rs. 3000 per acre at Rs. 40 per kg. "White" cardamom seeds, due to premature picking, must be carefully avoided. The return will be at least 60 per cent on capital invested: it could be double if the best yields were attainable and current prices, which are now higher than Rs. 40 per kg., obtained.

9.14 On old cultivation, where land was purchased at a much lower rate, new investment on replanting areas invaded by katte would be much more profitable. On such estates average yields are between 3 and 12 kgs. only. Replanting could, on suitable cardamom soil, give 75 kgs. per acre. Investment would only be of the order of perhaps Rs. 4500 per acre for three years or Rs. 1500 per year. If the increased yield is 50 kgs., the return at Rs. 40 per kg. would be Rs. 2000 per year, maintenance expenses being as before or 133 per cent of new investment. The total return would, of course, be higher.

Required: A Feasibility Study

The whole problem of what profitability could be in cardamom has been vitiated by the arbitrary and hasty manner in which land has been allocated for

YIELD RATE OF CARDAMOM
(17 Selected Large Scale Plantations)

Sample	Base of the planta- tion (Acres)	Production (in Kgs.)							Annual Average yield per acre
		1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	
1	56	1775	1600	2600	800	1000	900	..	25.82
2	108	873	342	289	189	143	92	..	3.00
3	50	..	..	2189	3316	883	929	849	32.70
4	50	150	250	250	150	155	166	..	3.70
5	50	..	..	476	1837	668	1066	628	18.70
6	60	..	1250	1400	1600	175	125	150	13.10
7	50	..	2000	1800	3000	2000	1000	650	34.80
8	150	962	3086	1672	1058	420	406	2000	9.10
9	60	..	1134	1179	1087	1225	1858	900	20.50
10	110	..	11667	15225	10191	4704	1552	5116	73.40
11	153	..	..	7000	6000	4500	4000	3000	32.00
12	100	..	..	..	..	..	2850	2800	23.30
13	75	..	..	..	..	2000	1600	1500	22.70
14	150	..	..	..	..	3200	3200	3000	20.70
15	50	..	..	..	1200	1200	1000	900	21.50
16	308	23929	8315	1956	320	5382	1615	..	22.50
17	150	..	..	..	..	3000	..	1800	16.00
Total production		1730	27689	29644	36036	30948	27455	22359	22293
Area covered		..	672	952	1205	1255	1480	1580	1208
Yield rate (in Kgs. per acre)		..	41.2	31.1	29.9	24.50	18.55	14.2	23.50

* It is advisable to replant entirely between the twelfth and fifteenth year as katte seems to develop much more rapidly on aged plants.

cardamom cultivation. One estimate is that four fifths of such land is unsuitable. Protective measures against katte have not been adequate even on many large estates. Thus, future investment which is almost spectacularly attractive has not been seen in its appropriate perspective under the best possible conditions.

9.16 It is recommended that a detailed feasibility study, based on availability of the most suitable land and on the application of knowledge of protection against plant diseases, should be undertaken without delay.

III. Investment in Improved Seeds and Varieties for Spices

9.17 A commercial unit supplying improved varieties of pepper vines, seeds, rhizomes and so on to the spice trade is urgently required. It has an assured market and awaits only an adequately equipped organisation. The National Seeds Corporation currently does not concern itself with spices and is not likely to do so in the future. It may be noted that the Government of India have classified both the seed and seed processing industries as "priority" industries entitling them to:

1. Tax exemption up to 8 per cent of profits,
2. Development Rebate at the higher rate of 35 per cent; and
3. Tax deduction of an amount equal to 1-1/5 of expenditure incurred in providing any goods, services or facilities to agriculturists.

9.18 This would be a small-scale industry drawing its know-how from the research units already operating in the spices field. It could also be a contractor, for certain purposes to the Cardamom Board and could supply in turn extension services with the supply of improved varieties.

9.19 The initial investment may be of the order of Rs. 5 lakhs. Profitability could be 33-1/3% on invested capital: but a detailed scrutiny of this proposal will now be necessary.

IV. Specialised Test Laboratories

9.20 Besides the laboratories required to implement the Agmark standards, there is a need for setting up 'specialised test laboratories' under the control of Directorate of Marketing and Inspection, Nagpur or in association with the Central Food Technological Research Institute, Mysore.

9.21 These laboratories are to be equipped to carry out the following tests to determine:—

1. the heat content of chillies as required by the Scoville test in the United States of America;
2. the piperine content of pepper and pungency component of pepper;
3. the farinaceous matter content in curry powder;
4. the moisture content in pepper, chillies, coriander, turmeric, ginger and curry powder;
5. the lead content in turmeric;
6. the ash (total or acid insoluble) content in pepper, turmeric, curry powder and coriander powder.

9.22 In addition to the above, the laboratories can undertake other useful work to help cultivators of spices in various ways such as soil testing.

9.23 These laboratories are required to be set up at Cochin and Bombay. It is expected that the initial cost of equipping these laboratories might be about Rs. 5 lakhs each and the annual cost of manning and running them would be about Rs. 3 lakhs each.

9.24 It is suggested that in the performance of these services, these laboratories should charge a suitable fee in order to be profitable institutions. The cost of enforcement of quality control has been successfully kept at about 0.5 per cent of the value of the commodity graded by the Directorate of Marketing and Inspection, Nagpur. This is stated to be half of the Japanese costs. Tests will have to be applied on a representative sample and a scale of fees acceptable to the trade drawn up. Besides this, soil testing fees and advisory service fees for control or eradication of diseases can offset any additional expenses. It is possible that overall receipts would be Rs. 5 lakhs and expenditure Rs. 4 lakhs, leaving a profit for each unit of Rs. 1 lakh.

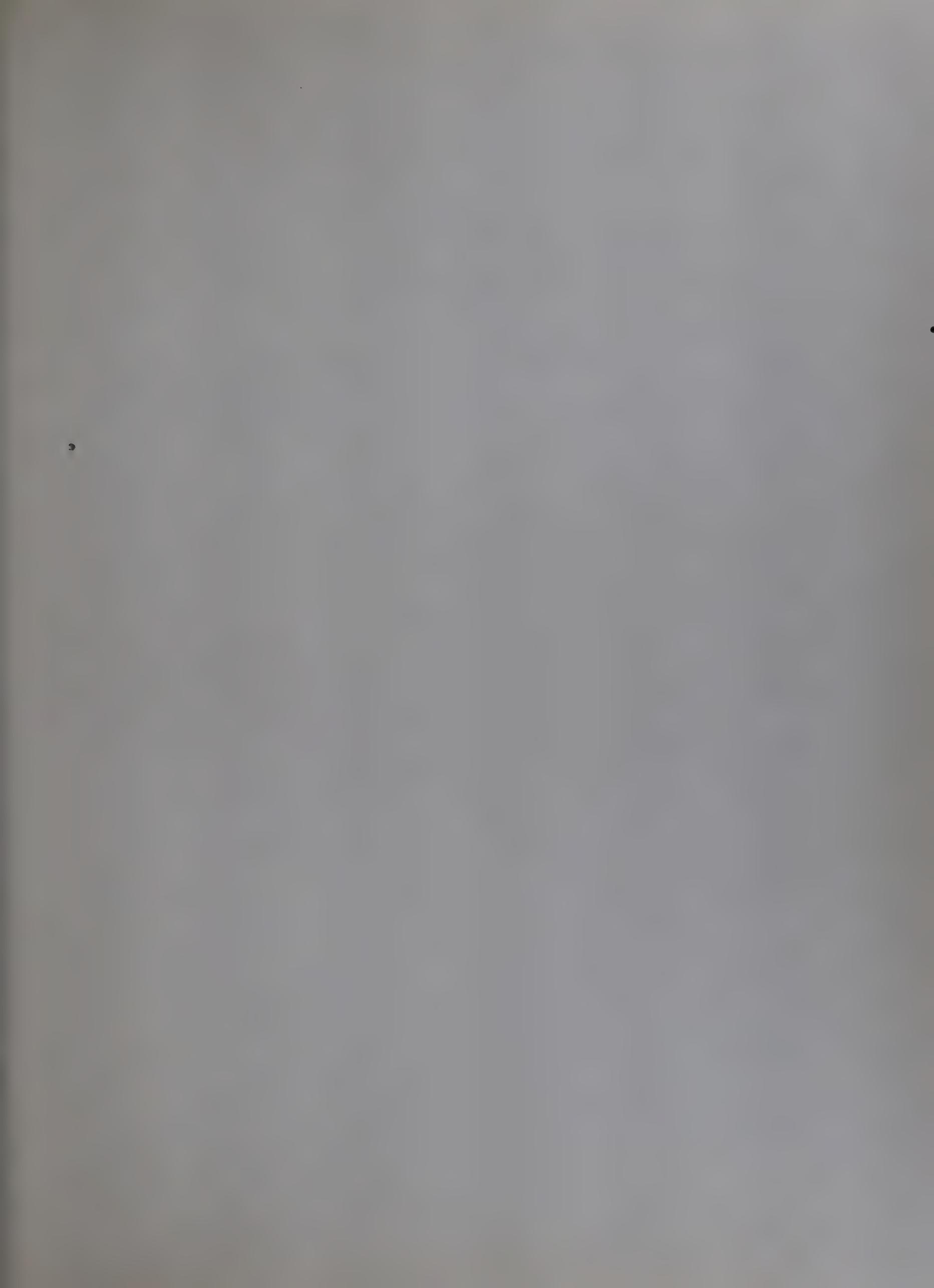
9.25 This is an area, where if private interests do not enter, the Mysore Food Technological Research Institute can profitably secure to itself additional resources. In this case the receipts should be free of tax since they will be used to extend research in this field.

V. Seed Cleaners, Separators, Treating Machines, Dehumidifiers and Packaging.

9.26 Another area of growing investment interest is the manufacture or operation for the whole industry of seed cleaners, separators, treating equipment and dehumidifiers. Much cost is often incurred by buyers (and recovered from sellers) on cleaning spices exported abroad which need "cleaning" under the conditions of import of "buying" countries, notably the Food and Drug Administration of the United States. Much the best course would be to "clean" all exports before shipment. If this is done separately by each shipper, the cost of "cleaning" establishment would be prohibitive. A number of services including cleaning and packing for export could provide a remunerative investment. The feasibility of such an organisation needs detailed enquiry, but the initial indications are very favourable.

9.27 We have recommended separately the import of the most up-to-date cleaners—and there is currently one which operates most efficiently with an electronic eye—as a form of Government assistance to this industry. However, if it is desired to finance such import with free foreign exchange there is no reason why equity from abroad should not be invited on a joint-venture basis. Foreign participation should then be large enough to cover the import cost of machinery.

9.28 A cleaning unit in Bombay has from our enquiries already proved "viable" as a servicing unit to exports there. There would therefore be *prima facie* evidence that a similar unit in Cochin as a new investment would be justified. It is recommended that the units should also enter the packaging field.



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